PIONEER

Service Manual

CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS

ORDER NO.
ARP-860-0

AUDIO/VIDEO STEREO RECEIVER

SX-V400(BK)

MODEL SX-V400(BK) COMES IN THREE VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
KU	AC120V only	U.S.A model
KC	AC120V only	Canada model
S/G	AC110V, 120V, 220V, 240V (switchable)	U.S. Military model

- **This service manual is applicable to the KU type.**
- **As to the S/G type, please refer to the additional service manual (ARP-889).**
- **As to the KC type, please refer to the additional service manual (ARP-861).**
- **As to the circuit descriptions, please refer to the SX-V500(BK) service manual (ARP-894).**
- **Ce manual d'instruction se refère au mode de réglage, en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

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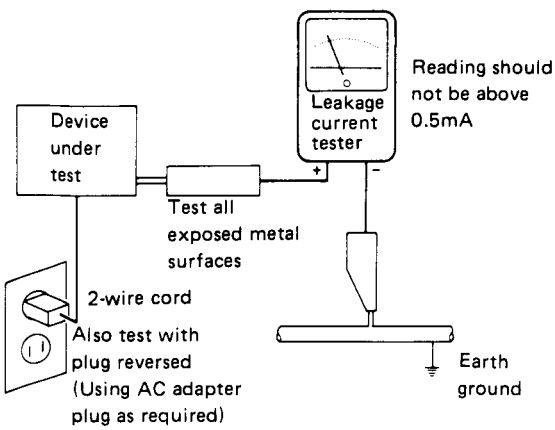
1. SAFETY INFORMATIONS

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service tecnician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Reading should not be above 0.5mA
Leakage current tester
Device under test
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

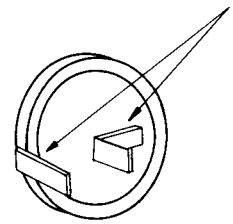
Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

• NOTE

Precautions on Lithium Battery Safe Replacing.

1. Solder it at the ends of the leads prewelded to the battery in the factory.
2. Be sure to use it within the specified temperature limits. (100°C)
3. Do not short the battery.
   Do not dispose it in fire.
   Do not try to recharge it.
   Do not mis-connect its polarity (+/−).
   Do not disassemble it.
   Do not expose it to water.
4. Please refer to the schematic diagram and exploded view on the Service Manual when replacing it.

Please do not solder the leads here.



QUESTIONNAIRE

MODEL _____

One Model per questionnaire

Dear Servicer,

Thank you for your cooperation in the post-sale service of Pioneer products.

This questionnaire is used as a tool to improve the serviceability of our products and service manuals. Please evaluate this model and service manual by answering the following questions. Your ideas may be realized in our future products. Your answers will be appreciated. Thank you.

PIONEER ELECTRONIC CORP.

T. Nakagawa, Manager, Service Section, International Division

1. SERVICING EVALUATION	Circle applicable number:	Good		Fair		Poor
a. Disassembly/Re-assembly:		1	2	3	*4	*5
b. Circuit Checks:		1	2	3	*4	*5
c. Replacement of Parts:		1	2	3	*4	*5
d. Adjustment (s):		1	2	3	*4	*5

* If (4) or (5) was circled, please be specific.

e. Your advice, opinion or ideas related to servicing this product.

2. SERVICE MANUAL EVALUATION

a. Circuit & Mechanism Description

b. Circuit Diagram

3. OTHER

Please describe other areas of servicing which you may find difficult.

Completed by : Date :

Company Name :

Address :

City/State/Zip :

Please send this form filled to the distributor in your country.

2. SPECIFICATIONS

NOTE:
Specifications and design subject to possible modifications without notice due to improvements.

Amplifier Section

Continuous Average Power Output is 60 watts* per channel, min., at 8 ohms from 20 Hertz to 20,000 Hertz with no more than 0.005% total harmonic distortion.**

Continuous Power Output, from POWER IN (both channels driven)
T.H.D. (20 Hz to 20 kHz, 0.005% 8 ohms) ..... 60 watts per channel
Intermodulation Distortion (50 Hertz : 7,000 Hertz = 4:1, 8 ohms, from POWER IN)
continuous rated power output ..... No more than 0.005%
Damping Factor
1 kHz, 8 ohms 53
20 Hz to 20 kHz, 8 ohms 45
Input (Sensitivity/Impedance)
PHONO MM ..... 2.5 mV/50 kilohms
CD, AUX, VDP, VCR, TAPE ..... 150 mV/50 kilohms
POWER INPUT ..... 1V/50 kilohms
Phono Overload Level (T.H.D. 0.03% 1,000 Hz)
PHONO MM ..... 160 mV
Cartridge Load Capacity/Load Resistance
PHONO MM ..... 220 pF/50 kilohms
Output (Level/Impedance)
TAPE REC ..... 150 mV/2.2 kilohms
PRE OUT ..... 1V/1.2 kilohms
Channel Separation
PHONO ..... 60 dB/1 kHz
CD, AUX, VDP, VCR, TAPE ..... 70 dB/1 kHz
SPEAKER ..... OFF, A, B, A series B
Load Impedance ..... 6 ohms to 16 ohms
Frequency Response
PHONO (RIAA Equalization) .... ± 0.3 dB (20 Hz to 20 kHz)
CD, AUX, VDP, VCR, TAPE ..... $^{+1}_{-3}$ dB (5 Hz to 100 kHz)
Tone Control
BASS ..... ±8 dB (100 Hz)
TREBLE ..... ±8 dB (10 kHz)
Noise filter ..... −5dB(40Hz to 5kHz)
Loudness Contour (Volume control set at −40 dB)
..... +7 dB (100 Hz), +3.5 dB (10 kHz)
Signal-to-Noise Ratio (IHF, short circuited A network)
PHONO MM ..... 73 dB
CD, AUX, VDP, VCR, TAPE, ... 96 dB

FM Tuner Section

Frequency range ..... 87.5 MHz to 108 MHz
Usable Sensitivity ..... Mono; 10.8 dBf, (0.95 μV/ 75 ohms)
50 dB Quieting Sensitivity . Mono; 15.7 dBf, (1.6 μV/75 ohms)
Stereo; 37 dBf, (19.5 μV/75 ohms)
Signal-to-Noise Ratio ..... Mono; 80 dB (at 65 dBf)
Stereo; 75 dB (at 85 dBf)
Distortion
Mono ..... 0.1% (100 Hz)
0.1% (1 kHz)
0.25% (6 kHz)
Stereo ..... 0.2% (100 Hz)
0.15% (1 kHz)
0.3% (6 kHz)
Capture Ratio ..... 1 dB
Alternate Channel Selectivity ..... 65 dB (400 kHz)
Stereo Separation ..... 50 dB (1 kHz)
35dB(30Hz to 15kHz)
Frequency Response ..... $^{+0.5}_{-1}$ dB (30 Hz to 15 kHz)
Spurious Response Ratio ..... 70 dB
Image Response Ratio ..... 50 dB
IF Response Ratio ..... 116 dB
AM Suppression Ratio ..... 55 dB
Tuning Threshold ..... 29.2 dBf (7.9 μv/75 ohms)
Antenna Input ..... 300 Ω balanced
75 Ω unbalanced

AM Tuner Section

Frequency range
..... 530 kHz to 1.600 kHz(KU, KC and S/G models)
..... 531 kHz to 1.602 kHz (only S/G model)
Sensitivity (IHF, Loop antenna) ..... 200 μV/m
Selectivity ..... 40 dB
Signal-to-Noise Ratio ..... 55 dB(at 100 dBμV/m)
Image Response Ratio ..... 45 dB
IF Response Ratio ..... 70 dB
Antenna ..... Loop Antenna

VHF Switch Section

Input/Output Impedance ..... 75 ohms
Frequency response ..... $^{+0}_{-1}$ dB (54 MHz to 216 MHz)
Crosstalk ..... 60 dB (54 MHz to 216 MHz)
VSWR ..... less than 1.5

Video Section

Input (Sensitivity/Impedance)
VDP/VCR 1, VCR 2 ..... 1 V p-p/75 ohms
Output (Level/Impedance)
VCR 2, MONITOR TV ..... 1 V p-p/75 ohms
Frequency responce ..... $^{+0}_{-2}$ dB (5 Hz to 10 MHz)
Crosstalk ..... 45 dB (3.58 MHz)
Signal-to-Noise Ratio ..... 55 dB

Miscellaneous

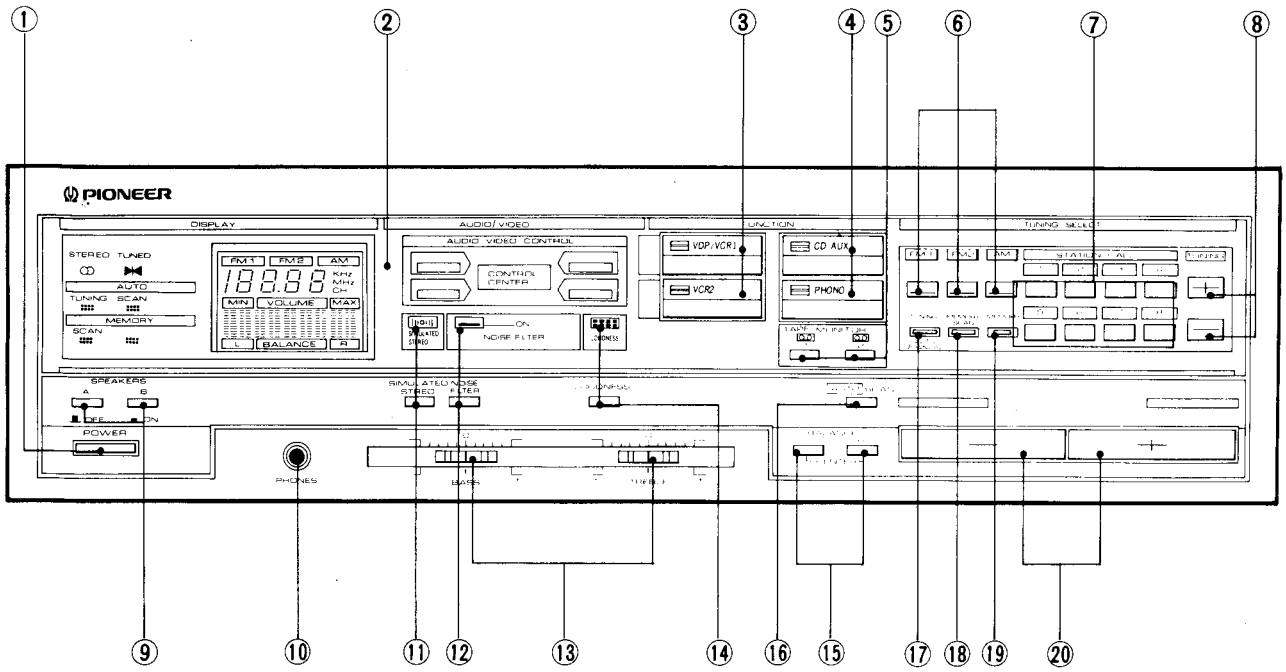
Power Requirements
KU and KC models ..... AC120 V, 60 Hz
S/G model ..... AC 110/120/220/240 V, 50/60 Hz
Power Consumption
KU , KC and S/G models 270W
Dimensions ..... 420(W) x 120(H) x 302(D) mm
16-9/16(W) x 4-3/4(H) x 11-7/8(D) in
Weight (without package) ..... 7.2 kg (15 lb 14 oz)

Furnished Parts

FM T-type Antenna 1
AM Loop Antenna 1
Operating Instructions 1

**Measured pursuant to the Federal Trade Comission's Trade Regulation rule on Power Output Claims for Amplifiers.*
***Measured by Audio Spectrum Analyzer.*

3. FRONT PANEL FACILITIES



① POWER switch

When this switch is pressed, power is supplied to the unit. To turn power off, press the switch again, to the released position.

② Display panel

For details, see the section "Display Panel Facilities."

③ VIDEO FUNCTION switches/indicators

VDP/VCR1: Press when performing playback on a video disc player (VDP) or video cassette recorder (VCR).

VCR2: Press when performing playback on a second VCR (for copying).

④ AUDIO FUNCTION switches/indicator

CD/AUX: Press when listening to a stereo component connected to the CD/AUX jacks.

PHONO: Press when playing records on a turntable.

⑤ TAPE MONITOR switches/indicators

These switches are used when performing tape playback, and recording monitoring. This receiver has two sets of tape jacks, allowing you to connect two tape decks for both recording and playback.

TAPE 1: Press this switch when playing the tape deck connected to the TAPE 1 jacks.

TAPE 2: Press this switch when playing the tape deck connected to the TAPE 2 jacks.

NOTE:
If TAPE 1 and TAPE 2 are pressed simultaneously, TAPE 2 alone will function.

⑥ BAND selector switches

FM 1, FM 2: Press either of these switches for FM reception.

AM: Press this switch for AM reception.

⑦ STATION CALL switches

These are pressed to tune in preset broadcasting stations and to preset the stations.
To tune in a station, first select the appropriate frequency band using the FM 1, FM 2 or AM switches, and then press the desired station number switch.

⑧ TUNING switch

These switches are used to manually scan the frequency range. Press the "+" switch to move to higher frequencies and the "−" switch to move to lower frequencies.

⑨ SPEAKERS switches

These are used to select the speakers through which you wish to listen.

A : To use the speakers connected to the SPEAKERS A terminals.

B : To use the speakers connected to the SPEAKERS B terminals.

NOTE:
No sound will be heard through the speakers when both the A and B switches are depressed if only one set of speakers has been connected to either the A or B SPEAKERS terminals.

⑩ PHONES jack

Connect the plug on your headphones to this jack. To listen to a program through the headphones, set both the SPEAKERS A and B switches to the OFF position.

⑪ SIMULATED STEREO switch/indicator

This turns monaural signals into simulated stereo sound. Use this when you wish to experience the sense of stereo presence with AM broadcasts, VCR or other monaural signal sources.

NOTE:
This function can also be used with stereo sources, but it will result in a different sound from the normal stereo sound.

⑫ NOISE FILTER switch/indicator

This filter eliminates audible high-frequency noise components. When playing back video tapes, if the audio channels contain noticeable high-frequency hiss noise, pressing this switch will make the sound easier to listen to.

NOTE:
- *The effectiveness of the NOISE FILTER system at reducing high-range noise varies depending on the tape used, recording level, and other conditions.*
- *When selecting the VIDEO FUNCTION switches, the NOISE FILTER switch can be set to ON. When this switch is set to ON, the AUDIO FUNCTION switches and Band selector switches are automatically set to OFF, if one of the VIDEO FUNCTION switches subsequently selected again, the NOISE FILTER switch will automatically turn ON once more.*

⑬ TONE controls

These controls are used to adjust the tone quality.

⑭ LOUDNESS switch/indicator

Press when listening to sound at a low volume level. This will enhance the bass and treble and give more life to the sound even at low volume level.

⑮ BALANCE control

Use to control the sound-volume balance between the right and left channels. To readjust the sound balance to the center position, press the "L" and "R" switches simultaneously.

⑯ AUTO SCAN switch

Press this switch to automatically scan the frequency range and press again to cancel the auto scanning mode. In the auto scanning mode, the receiver's internal electronic tuning circuit operates to tune in all available stations one after the other. Each station will be tuned in for about five seconds before the receiver moves to the next station.

NOTE:
When tuning stations with the auto scan mode, whenever the AUTO SCAN switch is pressed to release the receiver from the auto scan mode, the station currently tuned in will be held.

⑰ AUTO/MANUAL TUNING switch

This switch is used to select the tuning mode. Indicators on the display panel show whether the mode selected is AUTO or MANUAL.

AUTO tuning

When the UP or DOWN TUNING switch is pressed, the receiver automatically scans the broadcast station frequencies. When a broadcast is received, the scanning stops at that frequency.

MANUAL tuning

This is the usual tuning method. Each time the UP or DOWN TUNING switch is pressed, the reception frequency will be changed. If pressed continuously, the receiver will scan the broadcast frequencies continuously. When the receiver reaches the upper or lower limit of the possible reception frequencies, the scanning will automatically stop.

⑱ MEMORY SCAN switch

When this switch is pressed, the stations (AM:8 and FM:8 x 2) preset in the STATION CALL switches will be displayed in order.

⑲ MEMORY switch

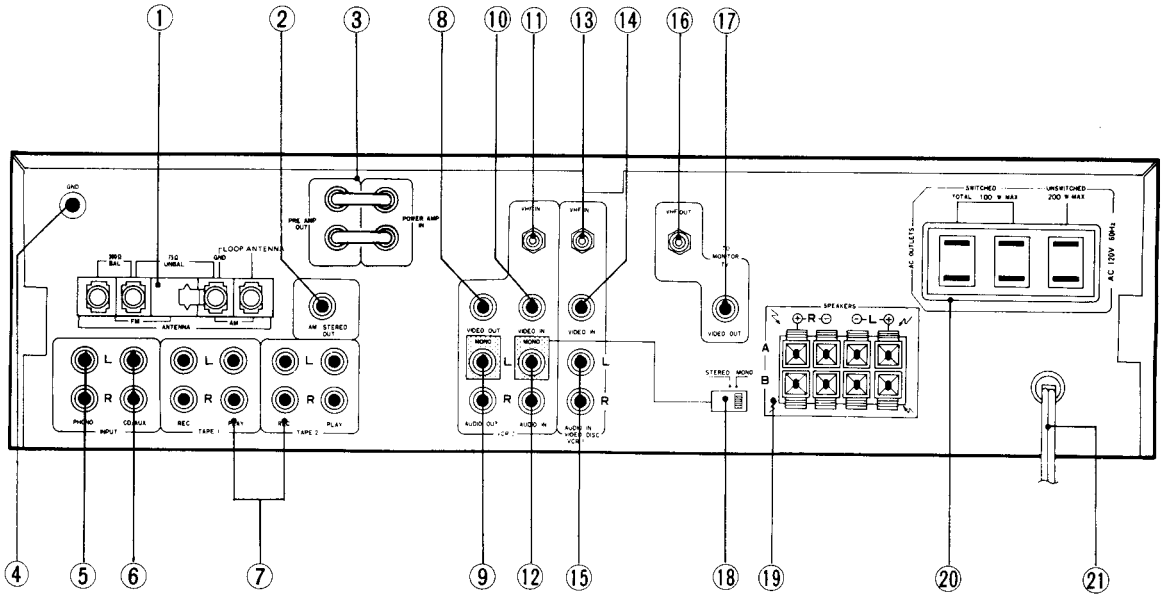
This switch is used to preset selected broadcasting frequencies (stations) in the STATION CALL switches. When this switch is pressed, the display panel's MEMORY indicator lights, and the tuning frequency flashes on the display. Stations can be preset while the MEMORY indicator is lit.

⑳ VOLUME switches

These switches are for adjusting sound volume. When the "+" switch is pressed, sound volume is increased, and when the "−" switch is pressed, sound volume is reduced. Pressing both switches simultaneously will reduce the volume to a minimum level.

To readjust the volume to the minimum position, press the "+" and "−" switches simultaneously.

4. REAR PANEL FACILITIES



[TUNER SECTION]

① ANTENNA terminals

These terminals are used for connecting FM and AM antennas. For details, see the section, "Hints for Better Reception".

② AM STEREO OUTPUT jacks

Connect to the input terminals of an AM stereo adaptor in order to receive AM stereo broadcasts. For details, consult the Operating Instructions accompanying your AM stereo adaptor.

[AUDIO SECTION]

③ PREAMPLIFIER/POWER AMPLIFIER connector bars

When the connector bars are removed from the jacks, you can separate the receiver's preamplifier and power amplifier. For normal use, however, they are left inserted.

NOTE:
If these bars are not inserted properly, you will not hear any sound from the speakers.

④ PHONO GND terminal

Connect the ground lead of the turntable.

⑤ PHONO INPUT jacks

Connect the output cords of a turntable.

⑥ CD/AUX INPUT jacks

Connect to the output jacks of a compact disc player or playback-only tape deck.

⑦ TAPE REC OUT/PLAYBACK jacks

The REC/PLAY jacks on the receiver consist of two sets, TAPE 1 and TAPE 2. It is possible to connect two tape decks to the receiver and do simultaneous recording or tape to tape recording (but only from tape deck 1 to tape deck 2). When connecting only one tape deck to the receiver, connect it to the TAPE 1 jacks.

Connecting for Recording

The tape recording jacks (TAPE REC) on the tape deck should be connected to the REC side of the TAPE jacks on the receiver.

Connecting for Playback

Connect the TAPE PLAY jacks on the tape deck and the PLAY side of the TAPE jacks on the receiver.

[VIDEO SECTION]

⑧ VCR2 VIDEO OUTPUT jack

When copying program materials from the video component connected to the VDP/VCR 1 jacks, connect the recording VCR's video input jacks.

⑨ VCR2 AUDIO OUTPUT jacks

When using the recording selector and connecting a VCR for copying, connect these jacks to the audio input jacks of the VCR used for copying.

NOTE:
When connecting a stereo component, be sure to connect the left and right channels correctly. If a monaural component is used, connect only to the L (MONO) jack.

⑩ VCR2 VIDEO INPUT jack

When playing back the video image from a VCR used for copying, connect its video output jack.

⑪ VCR2 VHF INPUT jack

When playing back a second VCR and watching with a TV set, connect this jack to the VCR's VHF OUTPUT jack.

⑫ VCR2 AUDIO INPUT jacks

When playing back the audio channel from a VCR used for copying, connect its audio output jacks.

NOTE:
When connecting a stereo component, be sure to connect the left and right channels correctly. If a monaural component is used, connect only to the L (MONO) jack.

⑬ VDP/VCR1 VHF INPUT jack

When playing back a VDP or VCR and watching with a TV set, connect this jack to the VHF OUTPUT jack of the VDP or VCR.

⑭ VDP/VCR 1 VIDEO INPUT jack

When playing back a VDP or VCR, connect this jack to the component's video output jack.

⑮ VDP/VCR1 AUDIO INPUT jacks

Connect to the audio output jacks of a video component such as a VCR or VDP.

⑯ TV SET VHF OUTPUT jack

Connect to the VHF input jack of a TV set in order to watch the playback from VCR or VDP, or a TV broadcast.

⑰ MONITOR TV VIDEO OUTPUT jack

Connect to the video input jack of a monitor television.

⑱ MONO/STEREO selector switch

Set in accordance with the type of audio of the VCR connected to the VCR2 jacks.

MONO:	When a monaural VCR is connected (connect the audio pin-plug to the L channel only).
STEREO:	When a stereo VCR is connected.

⑲ SPEAKERS terminals

A: Connect to a first set of speakers.

B: Connect to a second set of speakers.

⑳ AC OUTLETS

(SWITCHED)
Power supplied through these outlets is turned on and off by the receiver's POWER switch. Total electrical power consumption of connected equipment should not exceed 100 W.

(UNSWITCHED)
Power flows continually to this outlet, regardless of whether the receiver's POWER switch is ON or OFF. Electrical power consumption of the connected equipment should not exceed 200 W.
The equipment should be disconnected by removing the mains plug from the wall socket when not in regular use, e.g. when on vacation.

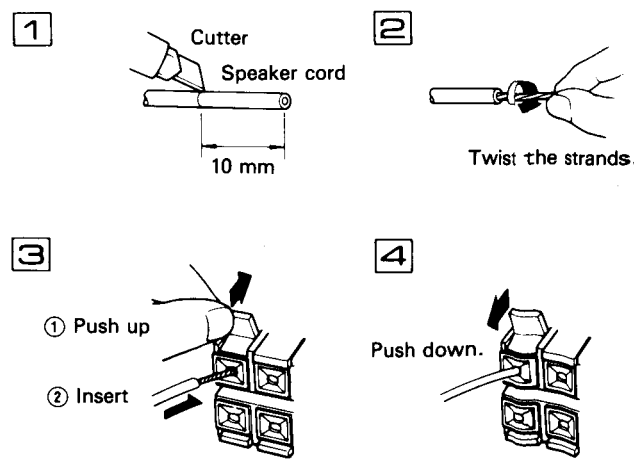
NOTE:
Do not connect appliances with high power consumption, such as heaters, irons, or television sets, to the AC OUTLETS, in order to avoid overheating or fire risk.
This can cause the receiver to malfunction.

㉑ Power cord

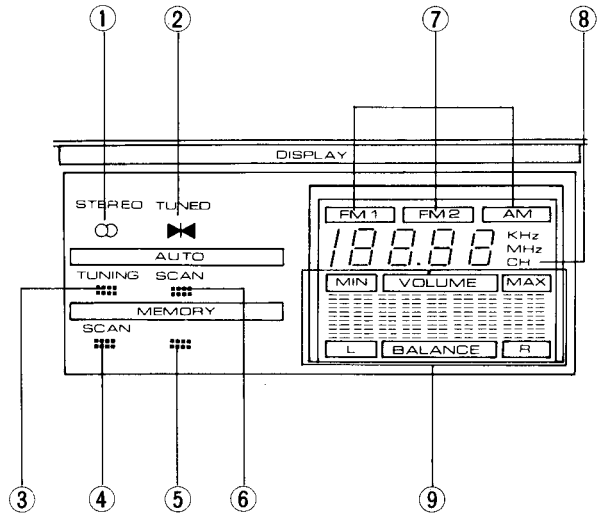
Preparing and connecting the speaker cords

1. Cut off the covering of the speaker cords as shown in the figure.
2. Twist them with your thumb and forefinger, otherwise some of the strands may come into contact with other terminals and cords, causing a short circuit.
3. Push up the minus lever of the speaker terminals with your finger and insert the minus speaker lead into the hole. The lead is locked into position when the lever is pushed down. Check that the lead is connected firmly.
4. In the same way, connect the plus speaker lead to the plus terminal.
5. Check that the core wires of the speaker cords are not projecting from the terminals. If they should project and come into contact, a short circuit will be caused.

Speaker lead wire preparation and connection



5. DISPLAY PANEL FACILITIES



① STEREO indicator

This lights to indicate that an FM station broadcasting in stereo has been tuned in.

② TUNED indicator

This lights to indicate that an FM or AM station has been tuned in.

③ AUTO TUNING indicator

This indicator lights when the reception mode is set for AUTO TUNING.

④ MEMORY SCAN indicator

Lights when the MEMORY SCAN switch is pressed.

⑤ MEMORY indicator

This indicator lights when the MEMORY switch is pressed.

⑥ AUTO TUNING SCAN indicator

Lights when the AUTO SCAN switch is pressed.

⑦ Band indicators

Light to indicate the band chosen with the Band Selector switch.

⑧ Frequency display

This digital display indicates the frequency to which the receiver is currently tuned.

⑨ VOLUME/BALANCE indicator

Displays the sound volume and right-left balance.

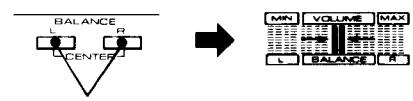
Volume display:

Display when power switch is turned ON:

- When the power switch is set to ON, the sound level indicator will flash. This display shows the sound level before the power was turned ON; during this time, the protective circuit is operating and no sound will be produced. While the indicator is flashing, if you feel the level shown is too large, lower the sound volume. If you wish to set the sound volume to the minimum position, press the "+" and "−" switches simultaneously.

Balance display:

To return to center setting:



Press both the L and R switches at the same time

- When the BALANCE switches are pressed, the indicator displays the sound balance between right and left speakers. A few seconds after completing balance adjustment, the display will return to its sound volume indicator function. To readjust the sound balance to the center position, press the "L" and "R" switches simultaneously.

6. DISASSEMBLY

■ Removal of bonnet case

1. Remove the bonnet case by removing 5 screws on the rear panel side of bonnet case.

■ Removal of tuner assembly

1. Remove 2 antenna terminal screws ❶ on the rear panel side, an AM STEREO OUT screw ❷ and a tuner assembly screw ❸ .
2. Remove the tuner assembly by pulling it up as tilting the volume assembly to the front panel side.

■ Removal of volume assembly

1. Remove the tuner assembly.
2. Remove the nylon rivet of volume assembly and pull up the volume assembly.

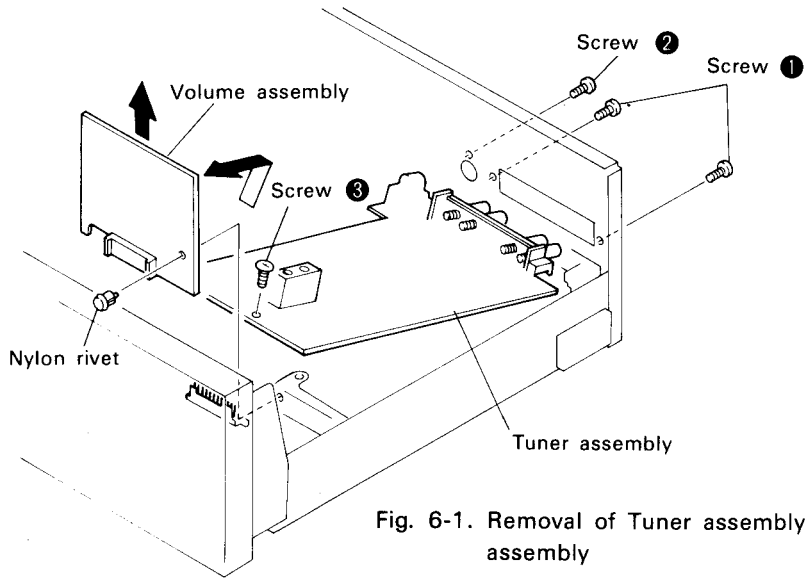


Fig. 6-1. Removal of Tuner assembly and volume assembly

■ Removal of RF switch assembly and video switch assembly

1. Remove the heat sink by loosing 4 securing screws ❶ .
2. Remove the heat sink holder B by removing 2 screws ❷ on the rear panel side of it.
3. Remove the VIDEO switch assembly by removing 2 screws ❸ on the rear panel side of it.
4. Remove the RF switch assembly by removing 4 nuts and 4 washers on the rear panel side of it.

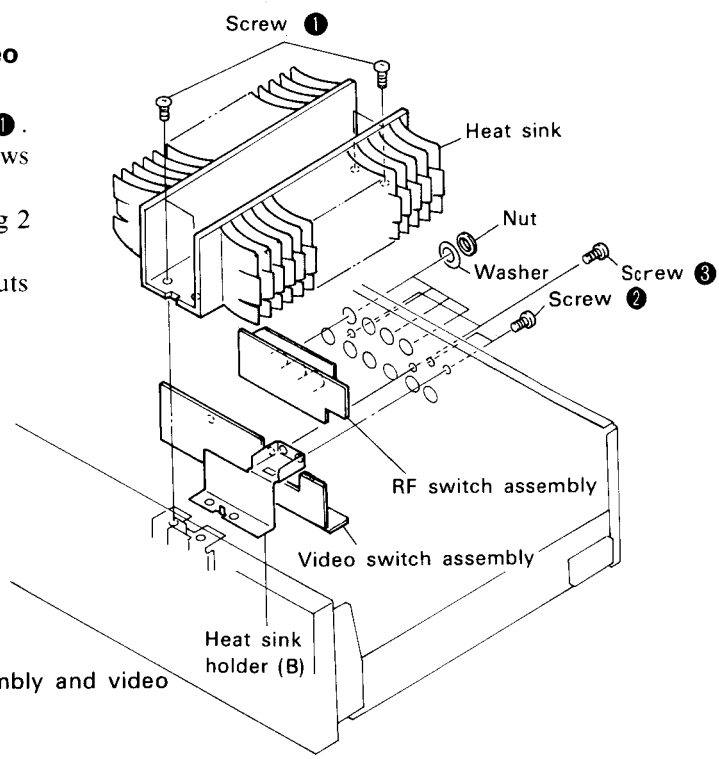


Fig. 6-2. Removal of RF switch assembly and video switch assembly

■ Removal of control assembly

1. Remove 3 screws ❶ on the upper side of front panel assembly.
2. Remove the front panel assembly and panel stay by removing 3 screws ❷ on the lower side and 4 screws ❸ on both sides of the panel stay.
3. Remove the front panel assembly from the panel stay by removing 3 claws on the lower side of the front panel assembly.
4. Remove 7 rivets of the panel stay from the rear panel side of it.
5. Remove 2 slide knobs by removing a rivet of the blinder.
6. Remove the control assembly from the panel stay by removing ❹ screws 4 of the tone volume.

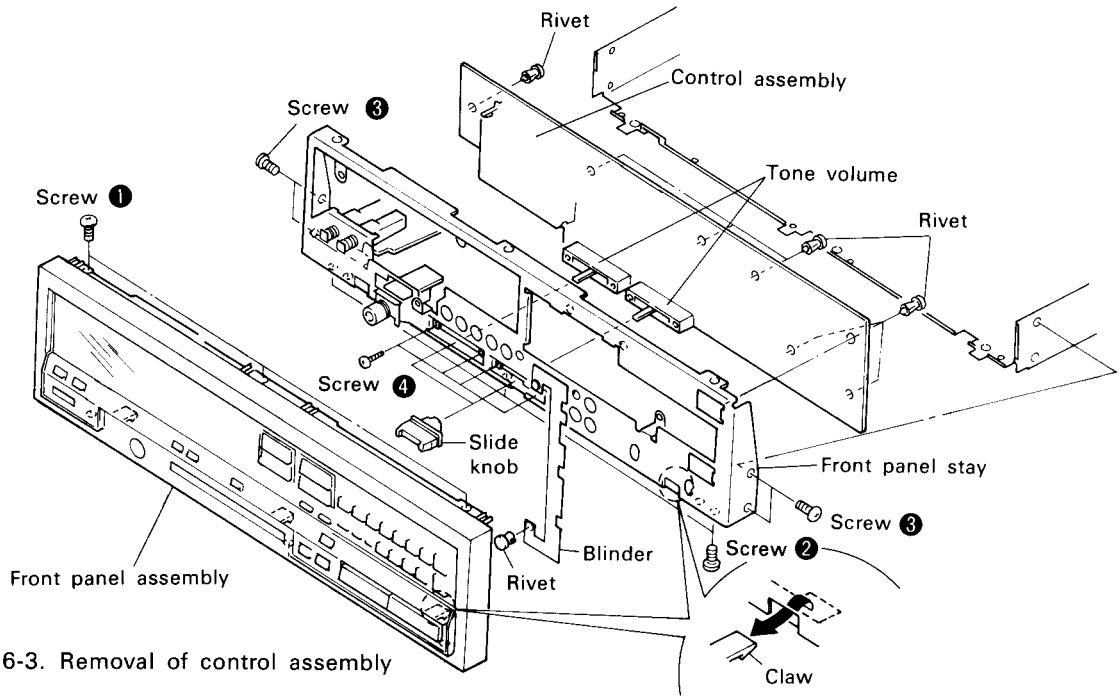


Fig. 6-3. Removal of control assembly

■ Removal of bottom plate

1. Remove the bottom plate A by removing a screw ❶ on the AF assembly side and 2 screws ❷ on the chassis side.
2. Remove the bottom plate B by removing 3 screws ❸ on the chassis side.

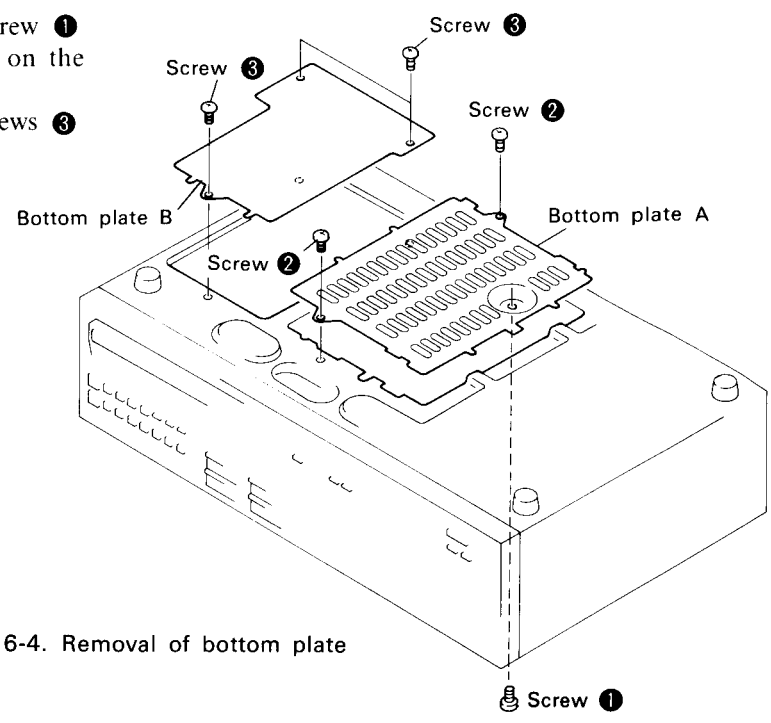


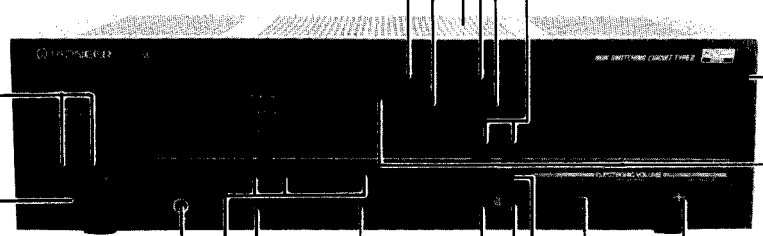
Fig. 6-4. Removal of bottom plate

7. PARTS LOCATION

NOTES:

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Front Panel View



Bonnet case
ANE-544

Function knob assembly C
(VCR2)
AAY-142

Function knob assembly A
(VDP/VCR1)
AAY-140

Knob A
(SPEAKERS)
AAY-157

Power knob
(POWER)
AAY-258

Phone jack
(PHONES)
AKN-045

Knob C
(SIMULATED STEREO,
NOISE FILTER, LOUDNESS)
AAY-136

Function knob assembly B
(CD/AUX)
AAY-141

Function knob assembly D
(PHONO)
AAY-143

Knob A
(TAPE MONITOR)
AAY-157

Front panel assembly
ANM-900

Indicator panel
AAK-040

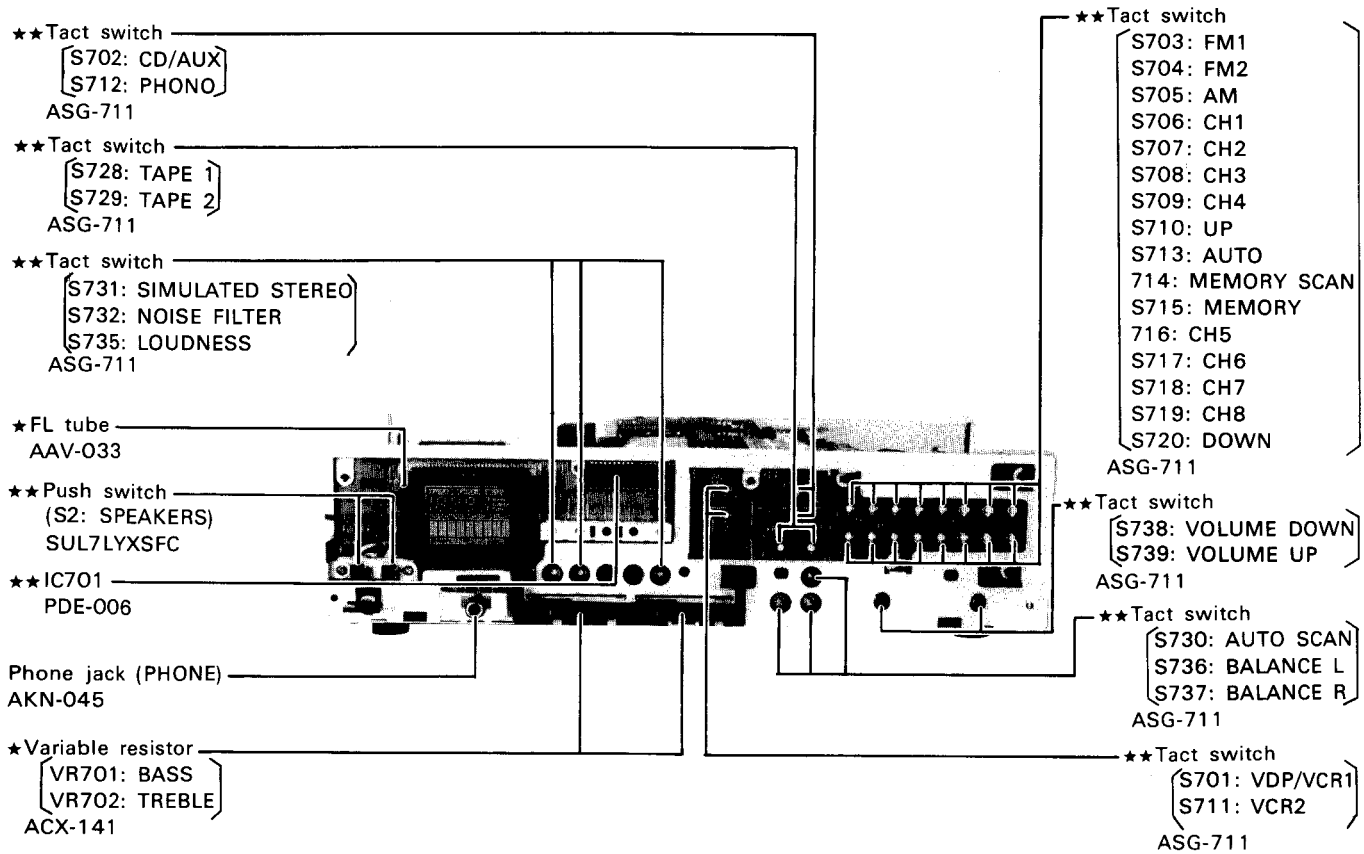
VR knob
(ELECTRONIC VOLUME)

Knob C
(AUTO SCAN)
AAY-136

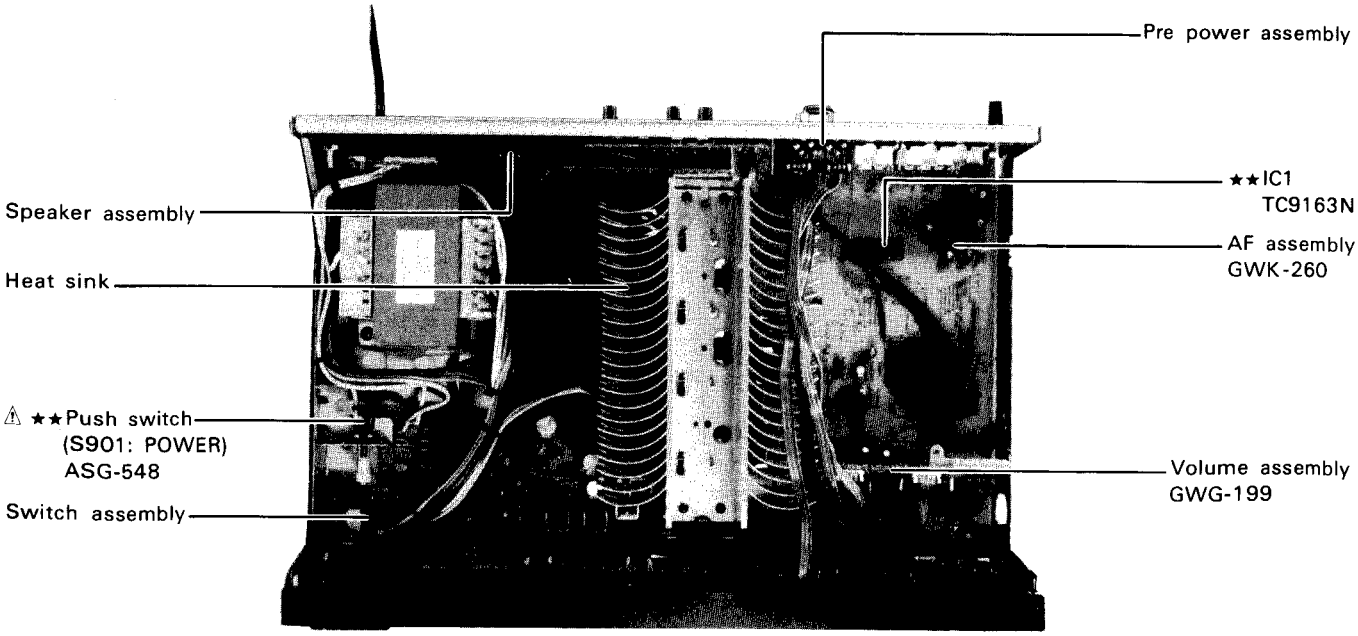
Knob B
(BALANCE L/R)
AAY-137

Slide knob
(BASS, TREBLE)
AAY-256

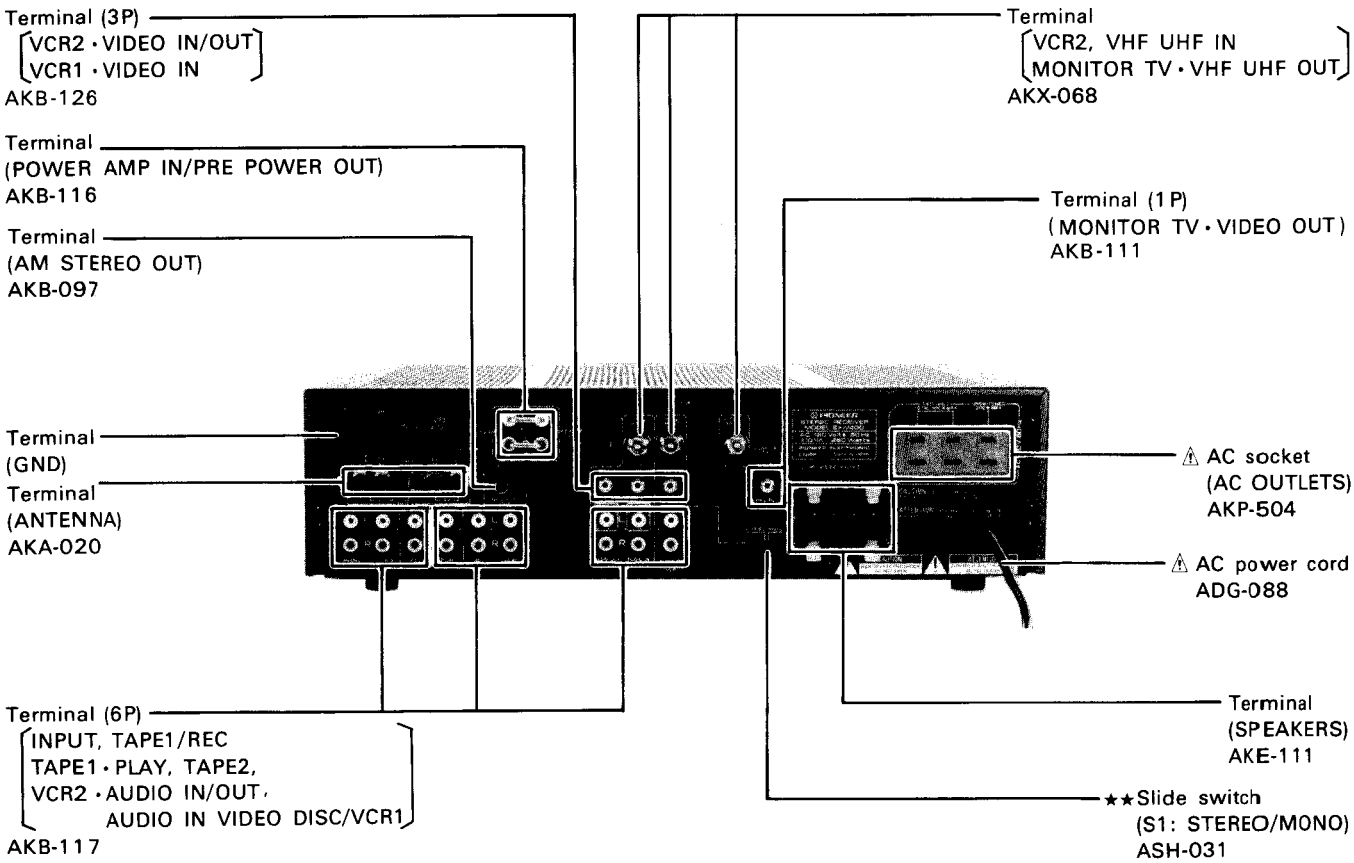
Front View with Front Panel Removed



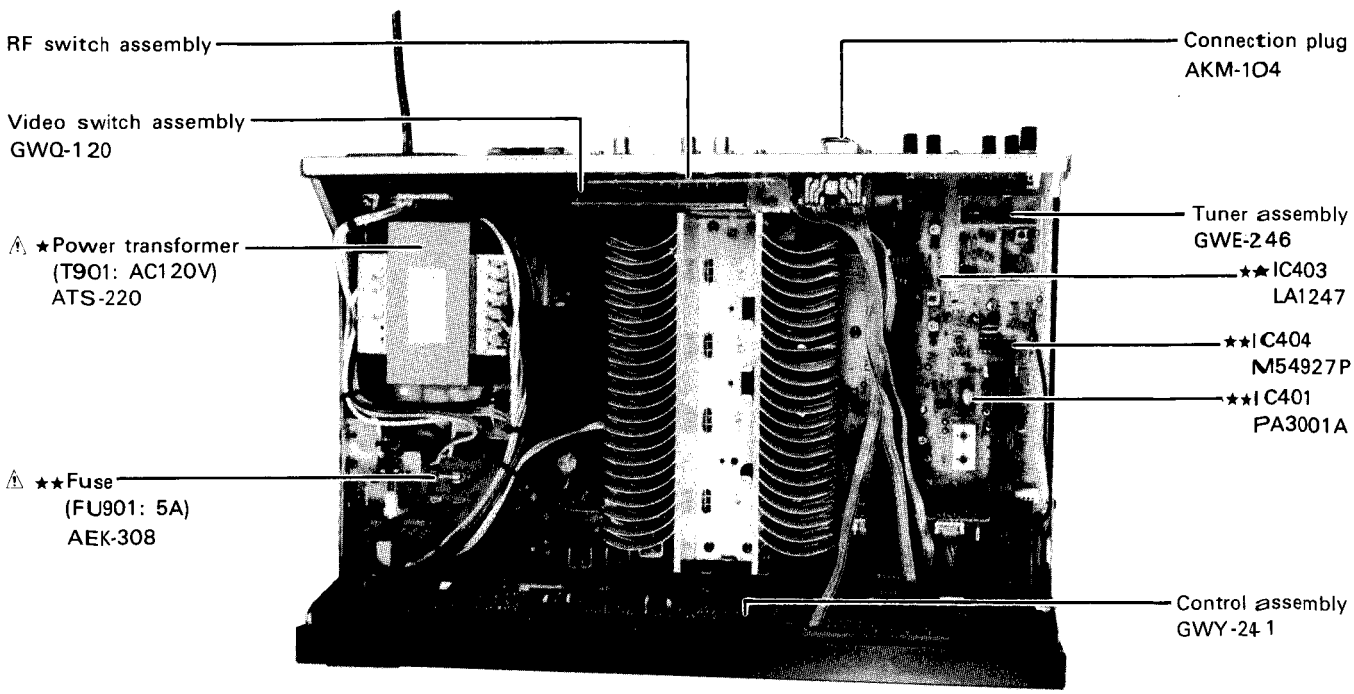
Top View with Tuner Assembly Removed



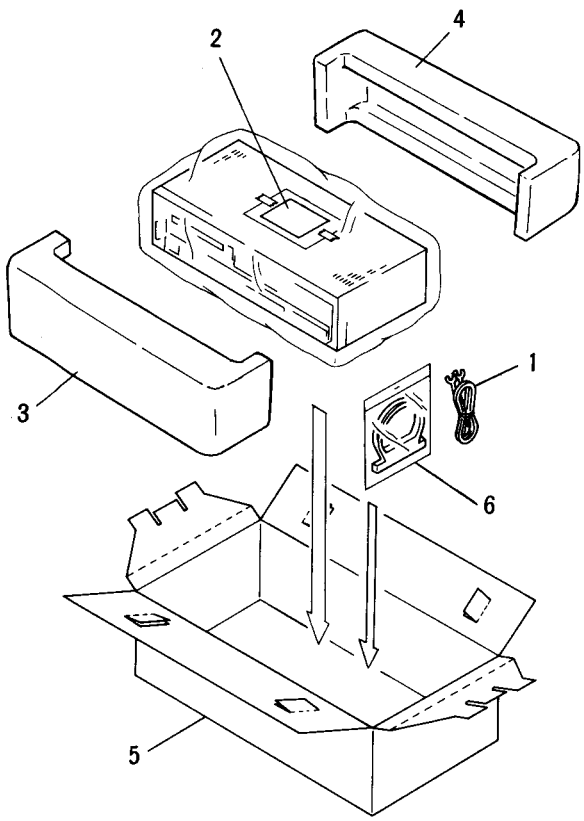
Rear Panel View



Top View



8. PACKING



Parts List

Mark	No.	Part No.	Description
	1	ADH-005	FM antenna
	2	ARB-670	Operating instructions (English)
	3	AHA-398	Front pad
	4	AHA-399	Rear pad
	5	AHE-503	Packing case
	6	ATB-102	L901 Loop antenna assembly

9. EXPLODED VIEW

NOTES:

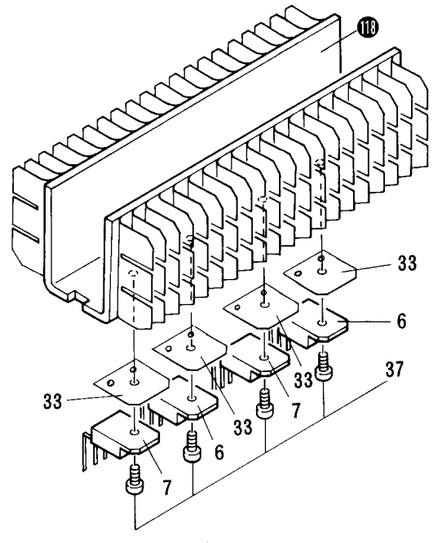
- ***Parts without part number cannot be supplied.***
- ***The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.***
- ***For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.***
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

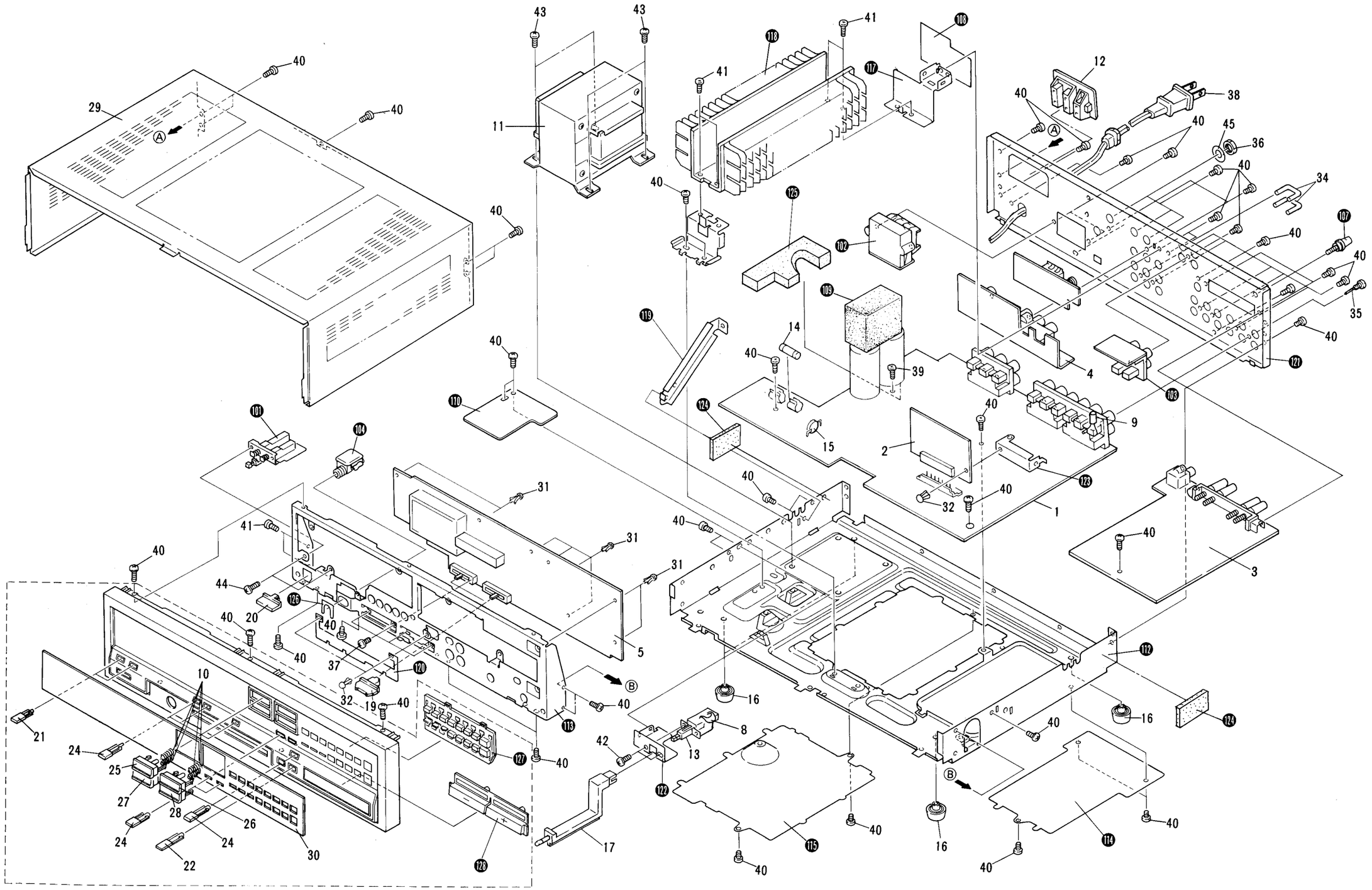
Parts List

Mark	No.	Part No.	Description
	1	GWK-260	AF assembly
	2	GWG-199	Volume assembly
	3	GWE-246	Tuner assembly
	4	GWQ-120	Video switch assembly
	5	GWY-241	Control assembly
⚠ ★★	6	2SA1265N	Q901, Q903
⚠ ★★	7	2SC3182N	Q902, Q904
⚠	8	ACG-001	C901 Capacitor (0.01/AC250V)
	9	CEA100M50L	C902 Electrical capacitor
	10	ABH-118	Coil spring
⚠ ★	11	ATS-220	T901 Power transformer (AC120V)
⚠	12	AKP-504	AC socket (AC OUTLETS)
⚠ ★★	13	ASG-548	S901 Push switch (POWER)
⚠ ★★	14	AEK-308	FU901 Fuse (5A)
⚠	15	AEX-008	Battery (Lithium) ※
	16	AEP-007	Leg assembly
	17	ANZ-023	SW joint
	18	ANM-900	Front panel assembly
	19	AAY-256	Slide knob (BASS, TREBLE)
	20	AAY-258	Power knob (POWER)
	21	AAY-257	Knob A (SPEAKERS)
	22	AAY-137	Knob B (BALANCE)
	23	ABH-118	
	24	AAY-136	Knob C (SIMULATED STEREO, NOISE FILTER, LOUDNESS, TAPE MONITOR, AUTO SCAN)
	25	AAY-140	Function knob assembly A (VDP/VCR1)
	26	AAY-141	Function knob assembly B (CD/AUX)
	27	AAY-142	Function knob assembly C (VCR2)
	28	AAY-143	Function knob assembly D (PHONO)
	29	ANE-544	Bonnet case
	30	AAK-040	Indicator panel
	31	AEC-441	Plastic rivet
	32	AEC-471	Nylon rivet
	33	AEC-818	Mica sheet
	34	AKM-104	Connection plug
	35	ABA-176	Screw
	36	ABN-087	Nut
	37	ABA-258	Screw
⚠	38	ADG-088	AC Power cord
	39	BBT30P080FMC	Screw (3x8)
	40	BBZ30P080FZK	Screw (3x8)
	41	BBZ30P100FZK	Screw (3x10)
	42	PMZ20P030FMC	Screw (2x3)
	43	UBZ40P080FMC	Screw (4x8)
	44	VMZ30P060FMC	Screw (3x6)
	45	WAXOF160K100	Washer
	101		Switch assembly
	102		Speaker assembly
	103		Pre power assembly
	104		Headphone assembly
	105		LED assembly
	106		RF switch assembly
	107		GND terminal
	108		Barrier sheet A
	109		Cushion
	110		Barrier sheet B
	111		Cushion
	112		Chassis
	113		Panel stey
	114		Bottom plate (A)
	115		Bottom plate (B)
	116		Heat sink holder (A)
	117		Heat sink holder (B)
	118		Heat sink
	119		Side frame
	120		Blinder
	121		Rear panel
	122		SW holder
	123		PCB holder
	124		Cushion
	125		Cushion rubber
	126		Mounting plate
	127		Station knob
	128		VR knob

※ See page 2

Exploded view of heat sink




43
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121
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39
4
103
9
119
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2
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128
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1
31
41
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31
44
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126
20
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120
32
19
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10
21
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22
30
128
40
16
8
42
13
122
17
115
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112
124
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174
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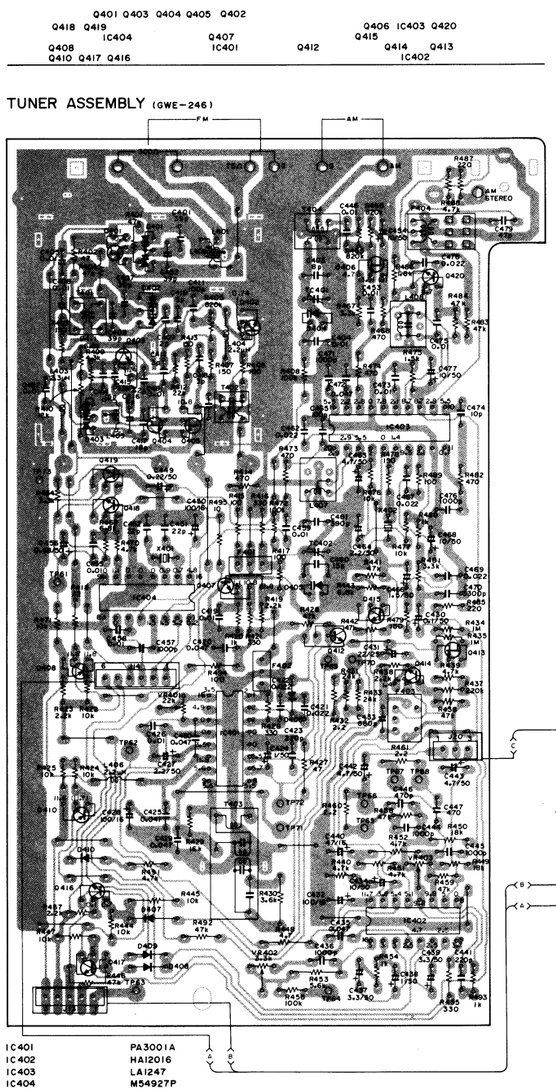
3
40

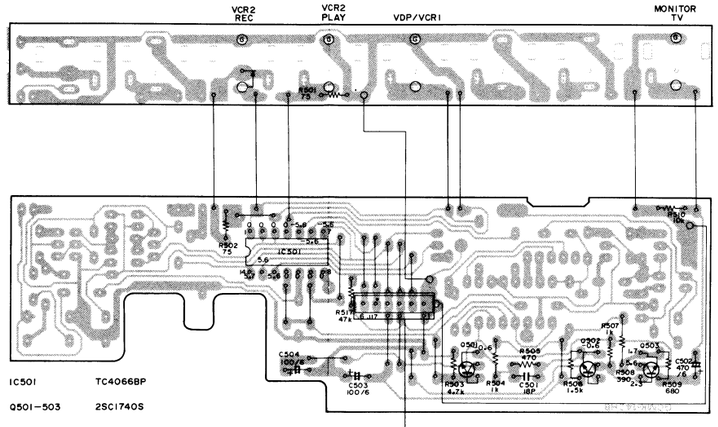
10. P.C. BOARDS CONNECTION DIAGRAM

TUNER ASSEMBLY (GWE-246)



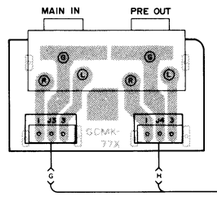
IC401	PA3001A
IC402	HAI2016
IC403	LA1247
IC404	M54927P
Q401	2SK241-Y
Q402	2SC2786-L
Q403,407,420	2SC2668
Q404,405	2SK161-Y
Q406,413	2SK246-GR
Q408,410	2SA933S
Q412,414-419	2SC1740S
D401-403	ISV147
D404,405	SVC321SP
D406-410	ISS131

VIDEO SWITCH ASSEMBLY (GWQ-120)

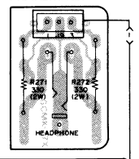


IC501	TC4066BP
Q501-503	2SC1740S

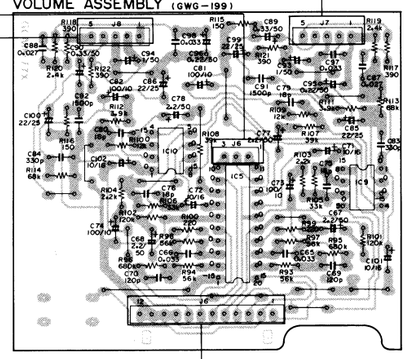
PREPOWER ASSEMBLY



HEADPHONE ASSEMBLY

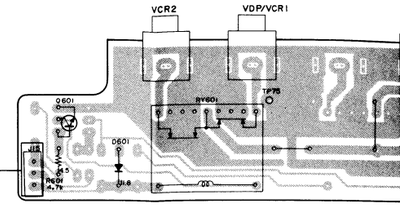


VOLUME ASSEMBLY (GWG-199)



IC5	TC9177BP
IC9,10	M5218PF

RF SWITCH ASSEMBLY (GWS-566)

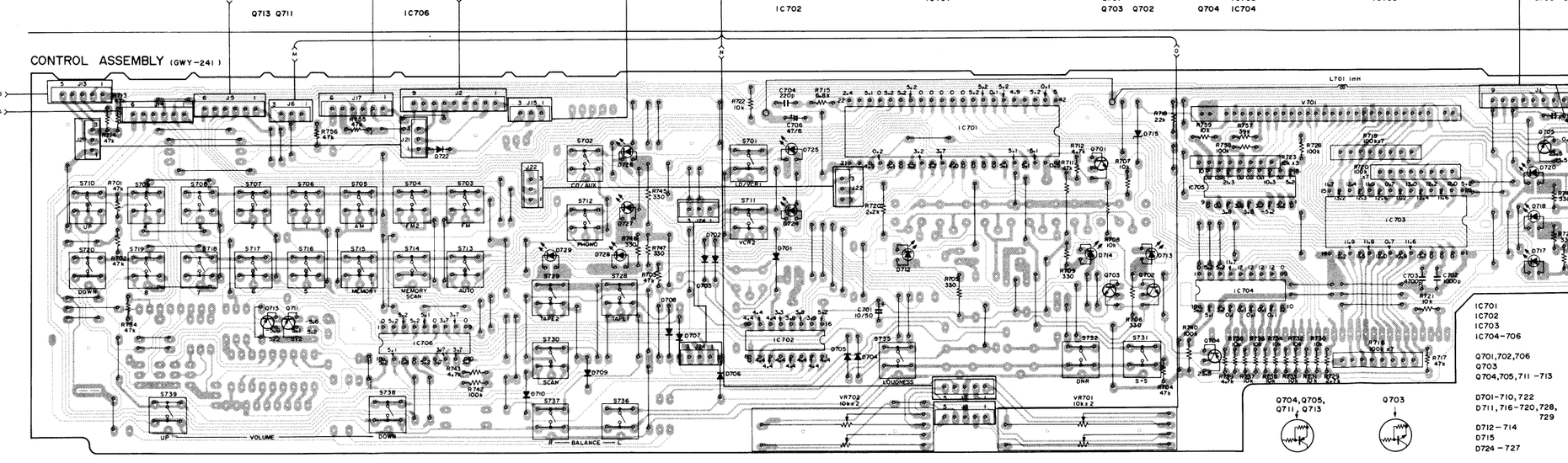


Q601,602	2SC1740S
D601-603	ISS133

AF ASSEMBLY

IC1	TC9163N	D201-208, 213, 214,
		303, 312, 315, 316,
IC3	PA4008	318, 319
		D209-212, 305, 306,
IC6	M5218P	D310, 311, 313, 320, 321, 323-326,
IC7	M5218PF	308, 309
IC11	M5201P	D302
IC201, 202	PA0016	D304
IC301	μPC78M05H	D314, 332
IC302	μPC78M12H	D317
		D322
Q1-3, 302, 304, 305, 310	2SC1740S	D327, 328
Q201, 202	2SA979	D331
Q203, 204, 215, 216	2SC2240	
Q207, 208	2SA1145	
Q209, 210	2SC2705	
Q211, 212	2SC2238	
Q213, 214	2SA968	
Q301, 306	2SD880	
Q303, 307-309	2SA933S	
Q311, 313	2SB560	
Q312	2SD836A	
Q315	RN2201	
Q314	RN1203	

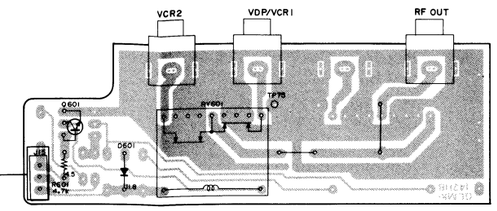
CONTROL ASSEMBLY (GWY-241)



IC701	
IC702	
IC703	
IC704-706	
Q701,702,706	
Q703	
Q704,705,711-713	
D701-710,722	
D711,716-720,728,729	
D712-714	
D715	
D724-727	

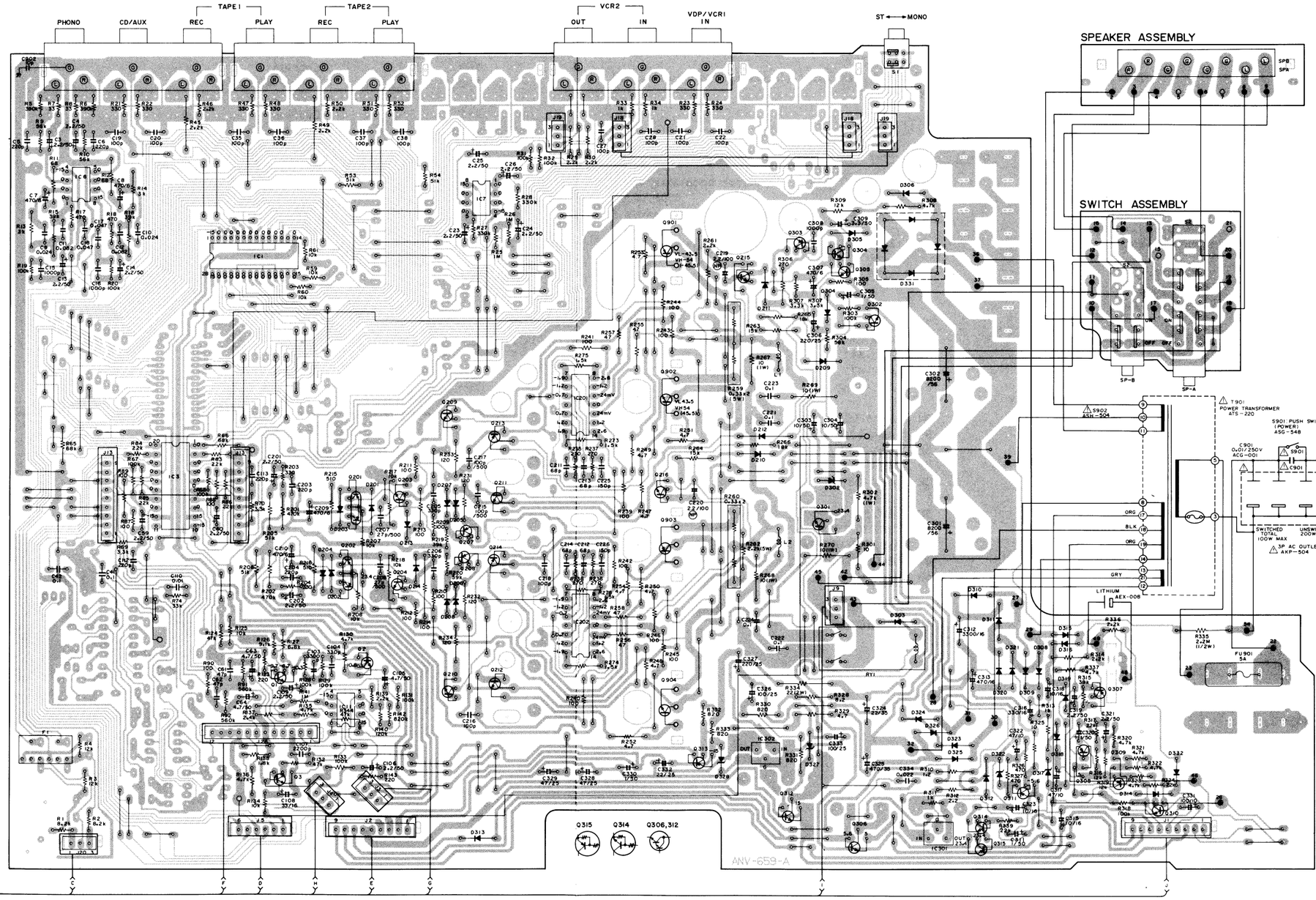
IC6 IC1 IC7 Q209 Q213 IC201 Q215 Q303 Q304 Q305 Q302
IC3 Q201 Q203 Q207 Q211 Q216 Q301
Q202 Q204 Q208 Q214 IC202
Q3 Q1 IC11 Q2 Q210 Q212 Q313 IC302 Q312 Q306 IC301 Q314 Q315 Q311 Q308 Q307 Q309 Q310

RF SWITCH ASSEMBLY (GWS-566)



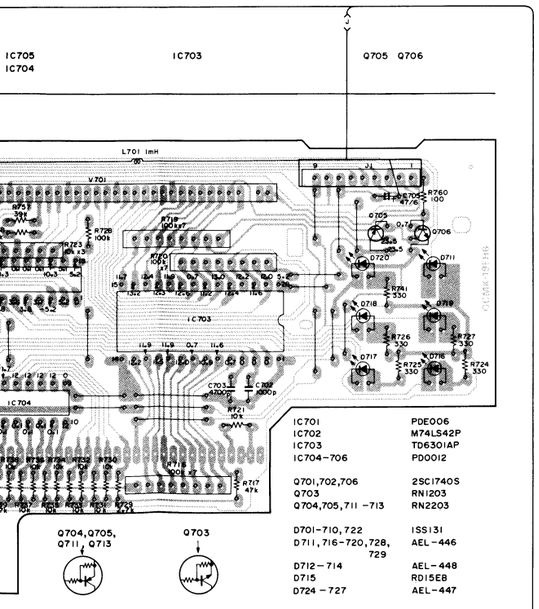
Q601, 602	2SC1740S
D601-603	ISS133

AF ASSEMBLY (GWK-260)



SEMBLY

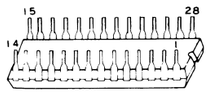
	TC9163N	D201-208, 213, 214, 303, 312, 315, 316, 318, 319	ISS131 (IS1555)
	PA4008	D209-212, 305, 306, D310, 311, 313, 320, 321, 323-326, 308, 309	11E2
	M5218P	D302	RD24E8
	M5218PF	D304	KZL083
	M5201P	D314, 332	USI035
	PA0016	D317	RD5.6E8
	μPC78M05H	D322	RD6.2E8
	μPC78M12H	D327, 328	RD16E8
		D331	RB602
2	2SC1740S		
	2SA979		
304, 305, 310	2SC2240		
215, 216	2SA1145		
	2SC2705		
	2SC2238		
307-309	2SA968		
	2SD880		
	2SA933S		
	2SB560		
	2SD836A		
	RN2201		
	RN1203		



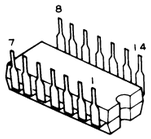
IC701	PDE006
IC702	M74LS42P
IC703	TD6301AP
IC704-706	P00012
Q701, 702, 706	2SC1740S
Q703	RN1203
Q704, 705, 711-713	RN2203
D701-710, 722	ISS131
D711, 716-720, 728, 729	AEL-446
D712-714	AEL-448
D715	RD15E8
D724-727	AEL-447

External Apperance of Transistors and ICs

TC9163N



PA0016



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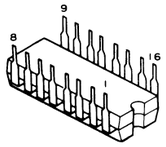
PA3001A



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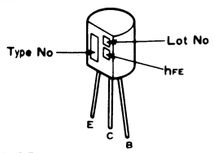
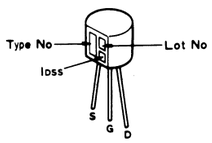
2SC2240
2SC2705



2SK246-GR



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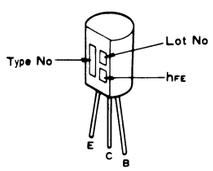

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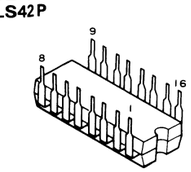
M74LS42P



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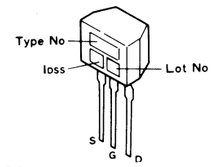
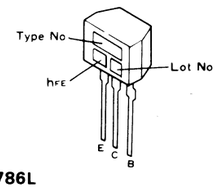
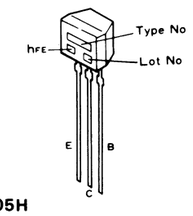
2SK241Y



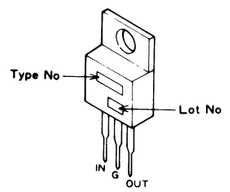
2SC1740S
2SA933S
2SC2668



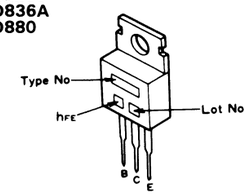
2SC2786L



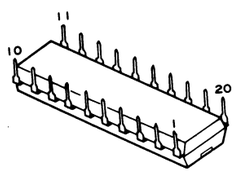
μPC78M05H
μPC78M12H



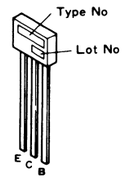
2SA968
2SC2238
2SD836A
2SD880



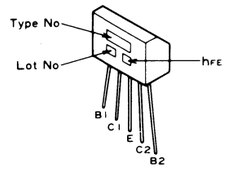
LA1247



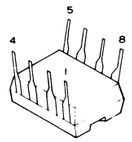
RN2201



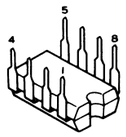
2SA979



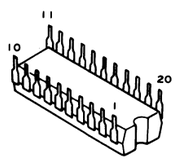
M5201P



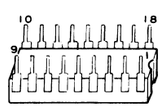
M5218PF
M5218P



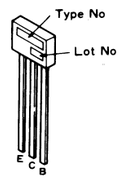
PA4008
TC9177P



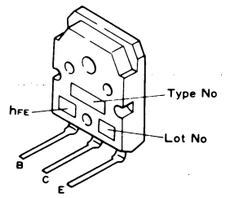
PD0012



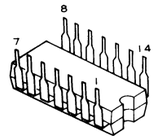
RN1203
RN2203



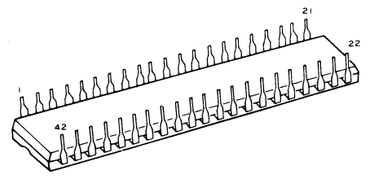
2SA1265N(A)
2SC3182N(A)



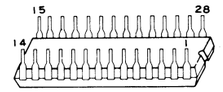
TC4066BP



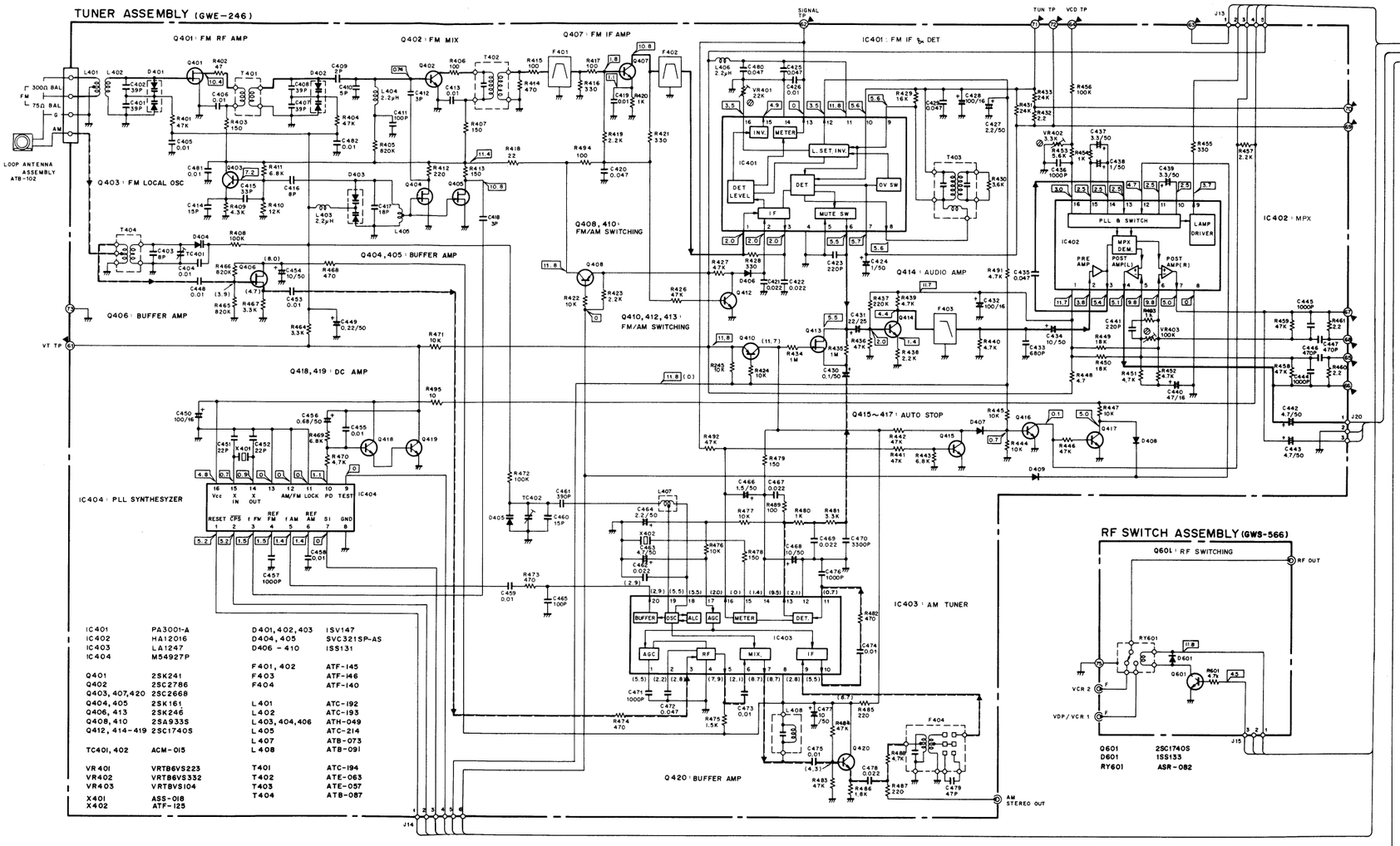
PDE006

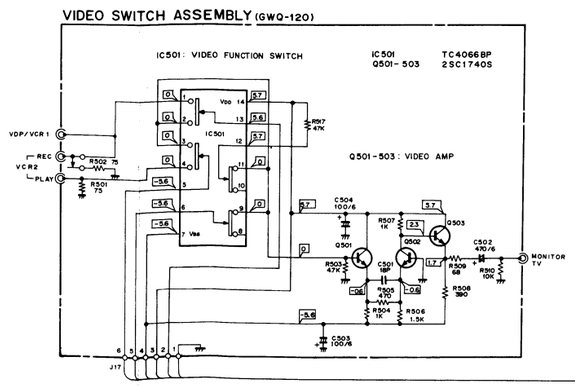


TD6301AP



11. SCHEMATIC DIAGRAM





1. RESISTORS:
   Indicated in Ω, 1/4W, 1/8W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance.
2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT:
   V : Signal voltage at 60W + 60W, 8Ω output (1 kHz).
   ( ) : DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.
   ⇦ mA; DC current at no input signal
4. OTHERS:
   : Signal route.
   : Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts unmbers.
5. SWITCHES:

OUTSIDE OF P.C. BOARDS

S901: POWER ON—OFF
S902: SPEAKER IMPEDANCE CHANGE
SP A or B 8Ω ~ 16Ω 4Ω ~ 8Ω
A and B 16Ω 8Ω ~ 16Ω

The underlined indicates the switch position.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

CONTROL ASSEMBLY

S701: FUNCTION	VDP/VCR1	NORMAL OFF	S728: TAPE MONITOR	1	NORMAL OFF
S702: FUNCTION	CD/AUX	NORMAL OFF	S729: TAPE MONITOR	2	NORMAL OFF
S711: FUNCTION	VCR2	NORMAL OFF	S730: TUNING SELECT	SCAN	NORMAL OFF
S712: FUNCTION	PHONO	NORMAL OFF	S731:	SS	NORMAL OFF
S703: TUNING SELECT	FM1	NORMAL OFF	S732:	NOISE FILTER	NORMAL OFF
S704: TUNING SELECT	FM2	NORMAL OFF			
S705: TUNING SELECT	AM	NORMAL OFF		LOUDNESS	NORMAL OFF
S706: TUNING SELECT	ST1	NORMAL OFF	S735:	L	NORMAL OFF
S707: TUNING SELECT	ST2	NORMAL OFF	S736: BALANCE	R	NORMAL OFF
S708: TUNING SELECT	ST3	NORMAL OFF	S737: BALANCE	DOWN	NORMAL OFF
S709: TUNING SELECT	ST4	NORMAL OFF	S738: VOLUME	UP	NORMAL OFF
S710: TUNING SELECT	FRQ UP	NORMAL OFF	S739: VOLUME		
S713: TUNING SELECT	AUTO/MANU	NORMAL OFF			
S714: TUNING SELECT	MEMORY SCAN	NORMAL OFF			
S715: TUNING SELECT	MEMORY	NORMAL OFF			
S716: TUNING SELECT	ST5	NORMAL OFF			
S717: TUNING SELECT	ST6	NORMAL OFF			
S718: TUNING SELECT	ST7	NORMAL OFF			
S719: TUNING SELECT	ST8	NORMAL OFF			
S720: TUNING SELECT	FRQ DN	NORMAL OFF			

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.

AF ASSEMBLY

IC1	TC9163N
IC3	PA4008
IC6	M5218P
IC7	M5218PF
IC11	M5201P
IC201, 202	PA0016
IC301	μPC78M05H
IC302	μPC78M12H

Q1-3,302,304,305,310	2SC1740S
Q201, 202	2SA979
Q203,204,215,216	2SC2240
Q207, 208	2SA1145
Q209,210	2SC2705
Q211,212	2SC2238
Q213,214	2SA968
Q301,306	2SD880
Q303, 307-309	2SA9335
Q311,313	2SB560
Q312	2SD836A
Q315	RN2201
Q314	RNI203

D201-208,213,214,303, 312,315,316,318,319	1SS131
D209-212,305,306, 310,311,313,320,321, 323-326,308,309	(1S1555)
D302	11E2
D304	RD24EB
D314,332	KZL083
D317	US1035
D322	RD5.6EB
D327,328	RD6.2EB
D331	RD16EB
	RB602

F1	ATF-164
L1,2	ATH-053
RY1	ASR-107
S1	ASH-031
X	
C301,302	ACH-285
R259,260	ACN-139
R335	ACN-209

CONTROL ASSEMBLY (GWY-241)

IC701 PDE006
IC702 M74LS42P
IC703 TD6301AP
IC704-706 PD0012

Q701,702,706 2SC1740S
Q703 RN1203
Q704,705,711,713 RN2203

D701-710,722 1SS131
D711,716-720, D728,729 AEL-446
D712-714 AEL-448
D715 RD15EB
D724-727 AEL-447

S701-720,728-732, 735-739 ASG-711

VR701-702 ACX-141

V701 AAV-033

Q701 LOUDNESS IND DRIVER

Q702 SIMULATED STEREO IND DRIVER

IC702 FUNCTION CONTROL

IC701 RECEIVER CONTROL

Q703 DNR IND DRIVER

Q704 FL IND DRIVER

IC703 FL DRIVER

Q705 FL CH IND DRIVER

IC705 FL & LED DRIVER

IC706 LED DRIVER

IC704 VOL IND & TUNED IND DRIVER

V701 AAV-033

AF ASSEMBLY (GWK-260)

IC6 EQUALIZER AMP

IC7 BUFFER AMP

PHONO
CD/AUX
VD/VCR1 IN
REC OUT (VD/VCR1)
VCR2 IN
REC TAPE1 PLAY
REC TAPE2 PLAY
STEREO MONO

12 13 14 15 16 17

A B C D

EQUALIZER AMP

BUFFER AMP

IC1 : FUNCTION SWITCH

IC3 : FUNCTION SWITCH

IC5 : ELECTRIC VOLUME

IC5 TC9177P
IC9,10 M5218PF

VOLUME ASSEMBLY (GWG-199)

IC11 : SIMULATED STEREO SWITCHING AMP

Q1, 2 : SIMULATED STEREO

Q3 : SIMULATED STEREO SELECTOR

PREPOWER ASSEMBLY

PRE OUT

MAIN IN

Q201~204, 207~216 : POWER AMP

Q901, 903 2SA1386
Q902, 904 2SC3519

IC201, 202 : NON SWITCHING POWER AMP

Q301, 306 : REGULATOR

Q302~305 : PROTECTION

Q309, 310 : RESET

Q307, 308 : HOLD

Q311~315 : REGULATOR

HEADPHONE ASSEMBLY

AKN-045

SP-SW

SPEAKER ASSEMBLY

SP-A

SP-B

AKE-111

SWITCH ASSEMBLY

S2 SUL7LYXSFC

T901 POWER TRANSFORMER ATS-220

3P AC OUTLETS AKP-504

SWITCHED TOTAL 100W MAX

UNSWITCHED 200W MAX

AC POWER CORD ADG-088

AC 120V 60Hz

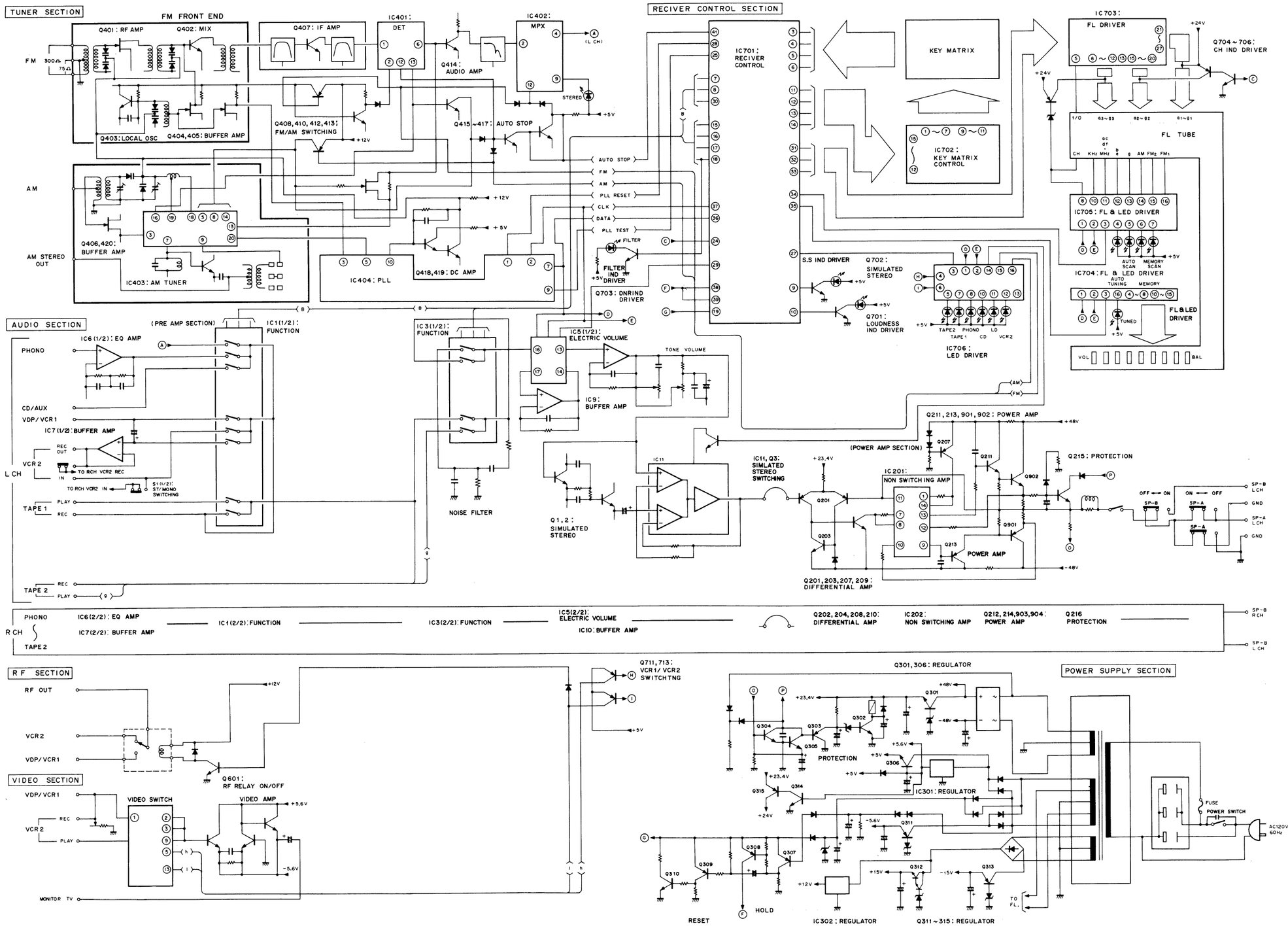
FU901 AEK-308

FUSE 5A

LITHIUM AEK-008

	FU901	FU902
K U	5A	NO
K C	5A	NO
S/G	2.5A	2.5A

12. BLOCK DIAGRAM



13. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω	*56 × 10¹*	*561 .....*	*RD¼PS 5 6 1 J*
47kΩ	*47 × 10³*	*473 .....*	*RD¼PS 4 7 3 J*
0.5Ω	*0R5*	*.....*	*RN2H 0 R 5 K*
1Ω	*010*	*.....*	*RS1P 0 1 0 K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621 ....*	*RN¼SR 5 6 2 1 F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Miscellaneous Parts

P.C.B BOARD ASSEMBLY

Mark	Symbol & Description	Part No.
	AF assembly	GWK-260
	Volume assembly	GWG-199
	Tuner assembly	GWE-246
	Video switch assembly	GWQ-120
	RF switch assembly	Non supply
	Control assembly	GWY-241
	Switch assembly	Non supply
	Speaker assembly	Non supply
	Pre power assembly	Non supply
	Headphone assembly	Non supply

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
⚠ ★★	Q901, Q903	2SA1265N (A)
⚠ ★★	Q902, Q904	2SC3182N (A)
	* hfe of 901—904 should have the same value	

SWITCHES

Mark	Symbol & Description	Part No.
⚠ ★★	S901 Push switch (POWER)	ASG-548

COIL AND TRANSFORMER

Mark	Symbol & Description	Part No.
⚠ ★	T901 Power transformer (AC120V)	ATS-220

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C901 Ceramic (0.01/AC250V)	ACG-001
	C902 Electrical capacitor (10/50V)	CEA100M50L

OTHERS

Mark	Symbol & Description	Part No.
⚠	AC socket (AC OUTLETS)	AKP-504
⚠ ★★	FU901 Fuse (5A)	AEK-308
⚠	AC Power cord	ADG-088
⚠	Battery (Lithium)	AEX-008 ※

※ See page 2

AF Assembly (GWK-260)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC11	M5201P
★★	IC7	M5218PF
★★	IC6	M5218P
★★	IC201, IC202	PA0016
★★	IC3	PA4008
★★	IC1	TC9163N
★★	IC301	μPC78M05H
★★	IC302	μPC78M12H
★	D304	KZL083
★	D331	RB602
★	D327, D328	RD16EB
★	D302	RD24EB
★	D317	RD5.6EB
★	D322	RD6.2EB
★	D314, D332	US1035
★	D201—D208, D213, D214, D303, D312, D315, D316, D318, D319	1SS131 (US1035) (1S1555)
★	D209—D212, D305, D306, D308, D309, D310, D311, D313, D320, D321, D323—D326	11E2
★★	Q315	RN2201
★★	Q207, Q208	2SA1145
★★	Q303, Q307—Q309	2SA933S
★★	Q314	RN1203
★★	Q213, Q214	2SA968
★★	Q201, Q202	2SA979
★★	Q311, Q313	2SB560
★★	Q1—Q3, Q302, Q304, Q305, Q310	2SC1740S
★★	Q211, Q212	2SC2238
★★	Q203, Q204, Q215, Q216	2SC2240
★★	Q209, Q210	2SC2705
★★	Q312	2SD836A
★★	Q301, Q306	2SD880

SWITCHE AND RELAY

Mark	Symbol & Description	Part No.
★★	S1 Slide switch (STEREO/MONO)	ASH-031
★★	RY1 Relay	ASR-107

COILS AND TRANSFORMER

Mark	Symbol & Description	Part No.
	F1 Low-pass filter	ATF-164
	L1, L2 AF Choke coil	ATH-053

CAPACITORS

Mark	Symbol & Description	Part No.
	C301, C302 (8200 μF/56V)	ACH-238
	C19—C22, C27, C28, C35—C38	CCCSL101J50
	C215—C218	CCCSL101K500
	C225, C226	CCCSL151J50
	C5, C6, C112, C113, C203, C204	CCCSL221J50
	C207, C208	CCCSL270K500
	C61, C62	CCCSL470J50
	C211—C214	CCCSL680J50
	C3, C4	CEANL2R2M50
	C219, C220	CEANP2R2M100
	C324	CEAS222M35
	C305, C311, C320, C330	CEA010M50L
	C315, C318, C323	CEA100M16L
	C303, C304	CEA100M50L
	C331	CEA101M10L
	C326, C333	CEA101M25L
	C13, C14, C23—C26, C59, C60, C106, C109, C201, C202, C319, C321	CEA2R2M50L
	C332	CEA220M25L
	C306, C327	CEA221M25L
	C309	CEA3R3M50L
	C108	CEA330M16L
	C316	CEA331M16L
	C312	CEA332M16L
	C63, C64, C105	CEA4R7M50L
	C317, C322	CEA470M10L
	C328, C329	CEA470M25L
	C313	CEA471M16L
	C325	CEA471M35L
	C7, C8, C209, C210, C307	CEA471M6L
	C308	CKCYB102K50
	C104, C205, C206	CKCYB331K50
	C17, C18	CKCYF473Z50
	C334	CKCYX223M25
	C15, C16, C107	CQMA102J50
	C9, C10	CQMA222J50
	C103	CQMA243J50
	C110, C111	CQMA332J50
	C41, C42, C221—C224	CQMA103J50
	C11, C12	CQMA104J50
		CQMA823J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
⚠	R259, R260 (0.33Ω×2 5W)	ACN-139
⚠	R335 (2.2 MΩ 1/2W)	ACN-209
⚠	R310	RD1/4PMF1R2J
⚠	R239—R246	RD1/4PMF101J
⚠	R312	RD1/4PMF2R2J
⚠	R267—R270	RS1PMF100J
⚠	R302	RS1PMF472J
⚠	R334	RS2PMF220J
	R261, R262	RD1/4PMF222J
	R255—R258	RD1/4PMF470J
⚠	R231—R234, R301, R325, R306, R247—R250, R328, R329	RFA1/4PS□□□J
	R65, R66, R207, R208, R215—R218, R251—R254, R263—R266, R273—R276, R308, R309, R313, R314, R327, R330, R331, R338, R340	RD1/4PM□□□J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (6P) (INPUT, TAPE1/REC • TAPE1 • PLAY, TAPE2, VCR2 • AUDIO IN/OUT, AUDIO IN VIDEO DISC/VCR1)	AKB-117
	Transistor socket	AKH-017
	Screw (3x6)	PBZ30P060FMC

Volume Assembly (GWG-199)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC9, IC10	M5218PF
★★	IC5	TC9177P

CAPACITORS

Mark	Symbol & Description	Part No.
	C75, C76, C79, C80	CCCSL180J50
	C95, C96	CEAR22M50L
	C89, C90	CEAR33M50L
	C93, C94	CEAO10M50L
	C71, C72, C101, C102	CEA100M16L
	C73, C74, C81, C82	CEA101M10L
	C67, C68, C77, C78	CEA2R2M50L
	C85, C86, C99, C100	CEA220M25L
	C83, C84	CKCYB331K50
	C91, C92	CQMA152J50
	C87, C88	CQMA273J50
	C65, C66, C97, C98	CQMA333J50
	C69, C70	CCCSL121J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Socket (12P)	AKP-047

Switch Assembly

SWITCH

Mark	Symbol & Description	Part No.
★★	S2 Push switch (SPEAKERS)	SUL7LYXSFC

Speaker Assembly

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (SPEAKERS)	AKE-111

Prepower Assembly

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (4P) (POWER AMP IN/ PREAMP OUT)	AKB-116

Headphone Assembly

RESISTORS

Mark	Symbol & Description	Part No.
	R271, R272	RS2LMF331J

OHTERS

Mark	Symbol & Description	Part No.
	Terminal (PHONES)	AKN-045

Tuner Assembly (GWE-246)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC402	HA12016
★★	IC403	LA1247
★★	IC404	M54927P
★★	IC401	PA3001A
★	D404, D405	SVC321SP
★	D406—D410	1SS131
★	D401—D403	1SV147
★★	Q408, Q410	2SA933S
★★	Q412, Q414—Q419	2SC1740S
★★	Q403, Q407, Q420	2SC2668
★★	Q402	2SC2786-L
★★	Q404, Q405	2SK161-Y
★★	Q401	2SK241-Y
★★	Q406, Q413	2SK246-GR

COILS, FILTERS AND TRANSFORMERS

Mark	Symbol & Description	Part No.
	L407 AM OSC coil	ATB-073
	T404 AM antenna transformer	ATB-087
	L408 AM DET coil	ATB-091
	L401 FM antenna coil	ATC-192
	L402 FM antenna coil	ATC-193
	T401 FM RF transformer	ATC-194
	L405 FM OSC coil	ATC-214
	T403 FM DET transformer	ATE-057
	T402 FM coupling transformer	ATE-063
	F404 AM ceramic filter	ATF-140
	F401, F402 FM ceramic filter	ATF-145
	F403 Beat eliminate filter	ATF-146
	L403, L404, L406 Inductor	ATH-049

CAPACITORS

Mark	Symbol & Description	Part No.
	TC401, TC402 Trimmer	ACM-015
	C465	CCCSL101J50
	C423, C441	CCCSL221J50
	C479	CCCSL470J50
	C416	CCDCH080D50
	C414	CCDCH150J50
	C451, C452	CCDCH220J50
	C415	CCDCH330J50
	C401, C402, C407, C408	CCDRH390J50
	C409	CCDSL020C50
	C412, C418	CCDSL030C50
	C410	CCDSL050C50
	C411	CCDSL101J50
	C403	CCDTH080D50
	C460	CCDTH150J50

Mark	Symbol & Description	Part No.
	C417	CCDTH180J50
	C449	CEAR22M50L
	C456	CEAR68M50L
	C428, C432, C450	CEAS101M16
	C430	CEAOR1M50L
	C424, C438	CEA010M50L
	C466	CEA1R5M50L
	C434, C454, C468, C477	CEA100M50L
	C427, C464	CEA2R2M50L
	C431	CEA220M25L
	C437, C439	CEA3R3M50L
	C442, C443, C463	CEA4R7M50L
	C440	CEA470M16L
	C457, C471, C476	CKCYB102K50
	C470	CKCYB332K50
	C433	CKCYB681K50
	C421, C422, C462, C467, C469, C478	CKCYF223Z50
	C420, C425, C429, C435, C472	CKCYX473M25
	C404—C406, C413, C419, C426, C448, C453, C455, C458, C459, C473—C475, C481, C482	CKDYF103Z50
	C480	CKDYF473Z50
	C444, C445	CQMA102J50
	C446, C447	CQMA471J50
	C436	CQSA102J50
	C461	CQSA391J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR403 Semi-fixed (100 kΩ)	VRTB6VS104
★	VR401 Semi-fixed (22 kΩ)	VRTB6VS223
★	VR402 Semi-fixed (3.3 kΩ)	VRTB6VS332
	R418, R494, R495, R448	RD1/4PMF□□□J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (ANTENNA)	AKA-020
	Terminal (AM STEREO OUT)	AKB-097
	X401 Crystal resonator	ASS-018
	X402 Ceramic resonator	ATF-125

Video Switch Assembly (GWQ-120)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC501	TC4066BP
★★	Q501—Q503	2SC1740S

CAPACITORS

Mark	Symbol & Description	Part No.
	C501	CCDSL180J50
	C502	CEAS471M6
	C503, C504	CEJA101M6

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R508	RD1/4PM391J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (1P) (MONITOR TV • VIDEO OUT)	AKB-111
	Terminal (3P) (VCR2 • VIDEO IN/OUT, VCR1 • VIDEO IN)	AKB-126

RF Switch Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★	D601	1SS131
★★	Q601	2SC1740S

SWITCH AND RELAYS

Mark	Symbol & Description	Part No.
★★	RY601 Relay	ASR-082

RESISTORS

Mark	Symbol & Description	Part No.
	R601	RD1/8PM472J

OTHERS

Mark	Symbol & Description	Part No.
	Connector socket (VHF, IN/OUT)	AKX-068

Main Control Assembly (GWY-241)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★	D711, D716—D720, D728, D729 LED	AEL-446
★	D724—D727 LED	AEL-447
★	D712—D714 LED	AEL-448
★★	IC702	M74LS42P
★★	IC701	PDE006
★★	IC704—IC706	PD0012
★★	IC703	TD6301AP
★	D715	RD15EB
★	D701—D710, D721, D722	1SS131
★★	Q703	RN1203
★★	Q704, Q705, Q711, Q713	RN2203
★★	Q701, Q702, Q706	2SC1740S

SWITCHES

Mark	Symbol & Description	Part No.
★★	S701—S720, S728—S732, S735—S739 Tact switch	ASG-711

COIL, FILTER AND TRANSFORMERS

Mark	Symbol and Description	Part No.
	L701 Inductor	ATH-098

CAPACITORS

Mark	Symbol & Description	Part No.
	C704	CCCSL221J50
	C701	CEJA100M50
	C705, C706	CEJA470M6
	C702	CKCYB102K50
	C703	CKCYB472K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR701, VR702 Slide variable resistor	ACX-141
	R723 Resistor array	RA7S103J
	R716, R719, R720 Resistor array	RA7S104J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
★	V701 FL tube	AAV-033

14. ADJUSTMENTS

FM Tuner Section

- Connect the FM signal generator (FM SG) to the FM ANTENNA 300Ω terminal through a 300Ω dummy antenna.
- Set the AUTO/MANUAL switch to the MANUAL position and the FUNCTION switch to the FM.

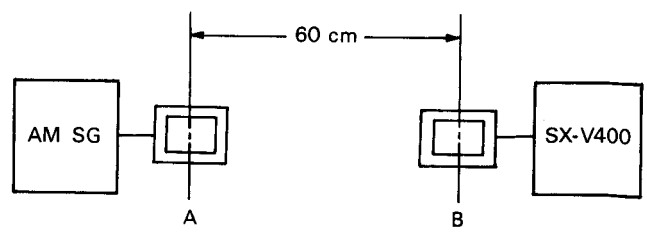
Step	FM SG (1 kHz±75 kHz dev.)		Frequency display	Adjustment point	Adjustment procedure
	Frequency	Level			
1	No signal		87.5 MHz	—	Check pin 61 (3.4±1.5V) of tuner assembly.
2			108.0 MHz		Check pin 61 ($8.7^{+2.5}_{-2.0}$V) of tuner assembly.
3	98 MHz	20~30 dB	98 MHz	T401, L402 T402	Set the output from pin 62 of tuner assembly to maximum level.
4	98 MHz	60 dB	98 MHz	T403 (Primary side)	Adjust voltage across pins 71 and 72 of tuner assembly to T meter center. (±10 mV)
5	98 MHz	60 dB	98 MHz	T403 (Secondary side)	Minimize distortion.
6	Repeat steps 4 and 5 until both specification ratings are satisfied.				
7	98 MHz No modulation	60 dB	98 MHz	VR402	Adjust the frequency at pin 64 of tuner assembly to 76.0 kHz (±100 Hz)
8	98 MHz Stereo modulation*	60 dB	98 MHz	T402	Minimize distortion in both left and right channel outputs (adjust T402 to within ±90°)
9	98 MHz Stereo modulation*	60 dB	98 MHz	VR403	Maximize separation.
10	98 MHz	24 dB	98 MHz	VR401	At first turn it fully clockwise then turn it gradually counterclockwise, and stop it at the point whereby STEREO IND is lit.
* Stereo modulation: Main 1 kHz L+R ±68.25 kHz dev. Pilot 19 kHz±6.75 kHz dev.					

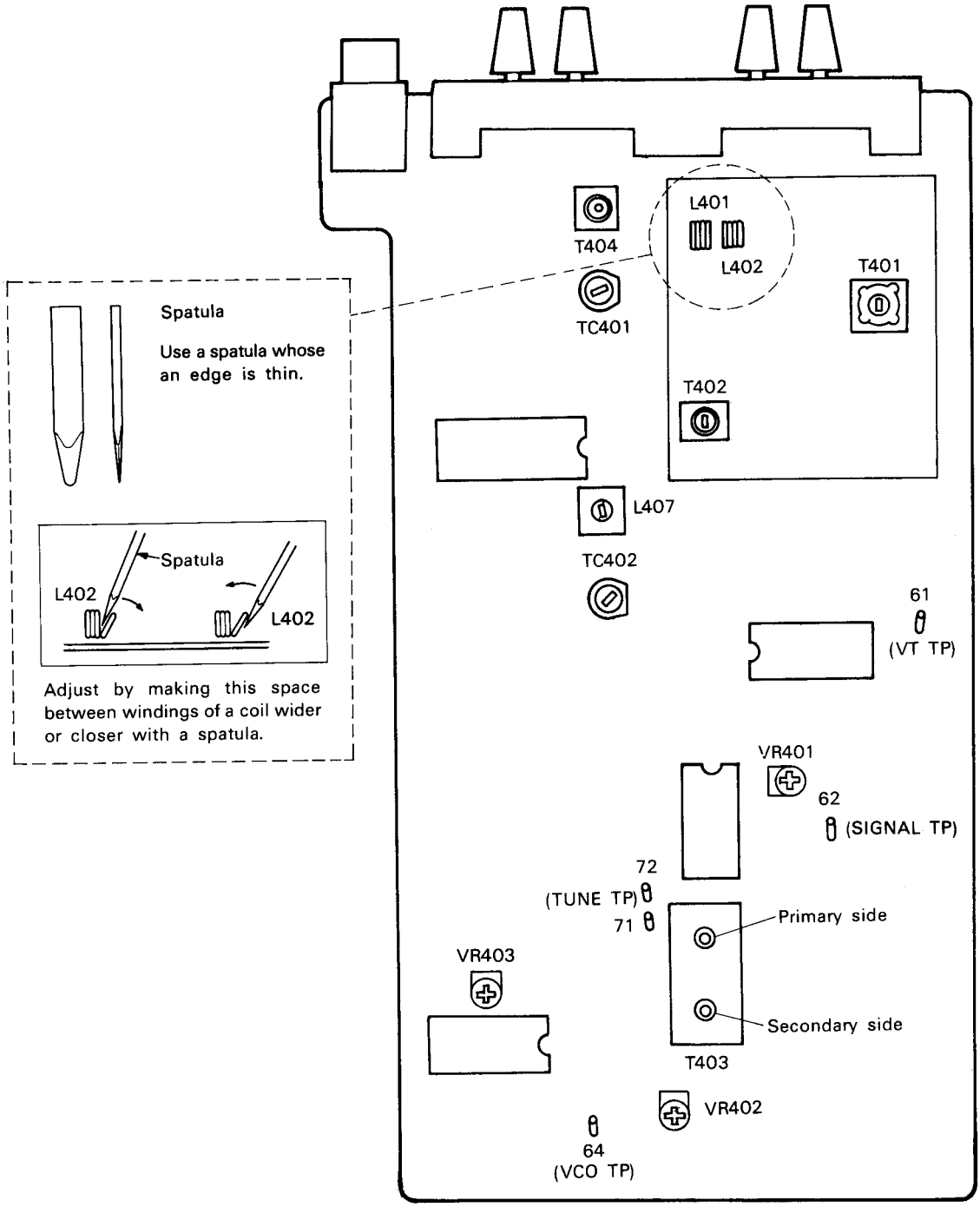
AM (MW) Tuner Section

- Connect loop antenna to the AM signal generator (AM SG), and connect the Loop antenna (of the set) to AM ANTENNA terminal.
- Set the FUNCTION switch to the AM (MW) .

Step	AM SG (400Hz, 30% MOD)		Frequency display	Adjustment pint	Adjustment procedure
	Frequency	Level			
1	No signal		530 kHz	L407	Set pin 61 of tuner assembly to 1.2V (±0.05V)
2			1600 kHz	TC402	Set pin 61 tuner assembly to 10.0V (±0.1V)
3	Repeat steps 1 and 2 until both specification ratings are satisfied.				
4	600 kHz	60 dB	600 kHz	T404	Set the output from pin 62 of tuner assembly to maximum level.
5	1400 kHz	50 dB	1400 kHz	TC401	
6	Repeat steps 4 and 5 until both specification ratings are satisfied.				
7	Be sure to confirm the TUNING IND is lit.				

- The distance between AM SG side loop antenna A and the receiver side (SX-V400) loop antenna B, that is, from the center of A side loop antenna to that of B side loop antenna should be 60 cm.




Spatula
Use a spatula whose an edge is thin.
Spatula
L402
L402
Adjust by making this space between windings of a coil wider or closer with a spatula.
T404
TC401
L401
L402
T401
T402
L407
TC402
61
(VT TP)
VR401
62
(SIGNAL TP)
72
(TUNE TP)
71
Primary side
Secondary side
VR403
T403
VR402
64
(VCO TP)

14. RÉGLAGE

SYNTONISATEUR MF

- Connecter le générateur de signal MF (FM SG) à la borne 300 ohm de l'ANTENNE MF via l'antenne factice ohm.
- Régler le commutateur AUTO/MANUAL sur MANUAL et le commutateur FUNCTION sur MF

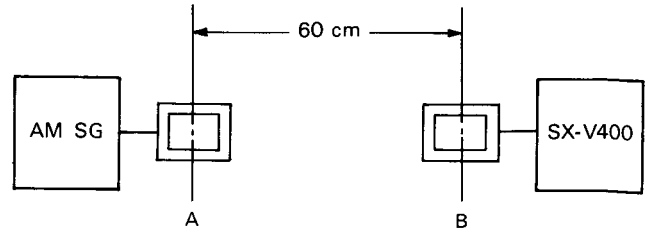
Etape	FM SG (1 kHz±75 kHz dev.)		Affichage de fréquence	Point de réglage	Procédé de réglage
	Fréquence	Niveau			
1	Aucun signal		87,5 MHz	—	Vérifier la fiche 61 (3,4±1,5V) de l'ensemble tuner
2			108,0 MHz		Vérifier la fiche 61 ($8,7\ ^{+2,5}_{-2,0}$ V) de l'ensemble tuner
3	98 MHz	20~30 dB	98 MHz	T401, L402 T402	Régler la sortie de la fiche 62 de l'ens, tuner au niveau max.
4	98 MHz	60 dB	98 MHz	T403 (Côté primaire)	Régler le voltage des fiches 71 à 72 de l'ens, tuner au center T du compteur.
5	98 MHz	60 dB	98 MHz	T403 (Côté secondaire)	Minimiser la distorsion.
6	Répéter les étapes 4 et 5 jusqu' à la satisfaction des deux spécifications.				
7	98 MHz	60 dB	98 MHz	VR402	Régler la fréquence de la fiche 64 de l'ens, tuner à 76,0 kHz (±100 Hz)
	Aucune modulation				
8	98 MHz	60 dB	98 MHz	T402	Réduire la distortion dans des deux canaux droit et gauche (régler T402 à±90°)
	Modulation stéréo*				
9	98 MHz	60 dB	98 MHz	VR403	Maximaliser la séparation.
	Modulation stéréo*				
10	98 MHz	24 dB	98 MHz	VR401	Le tourner d'abord à fond dans le sens horaire, puis graduellement en sens inverse, et l'arrêter au point où STEREO IND s'allume.
* Modulation stéréo: Principal 1 kHz L+G ±68,25 kHz dev. Pilote 19 kHz ±6,75kHz dev.					

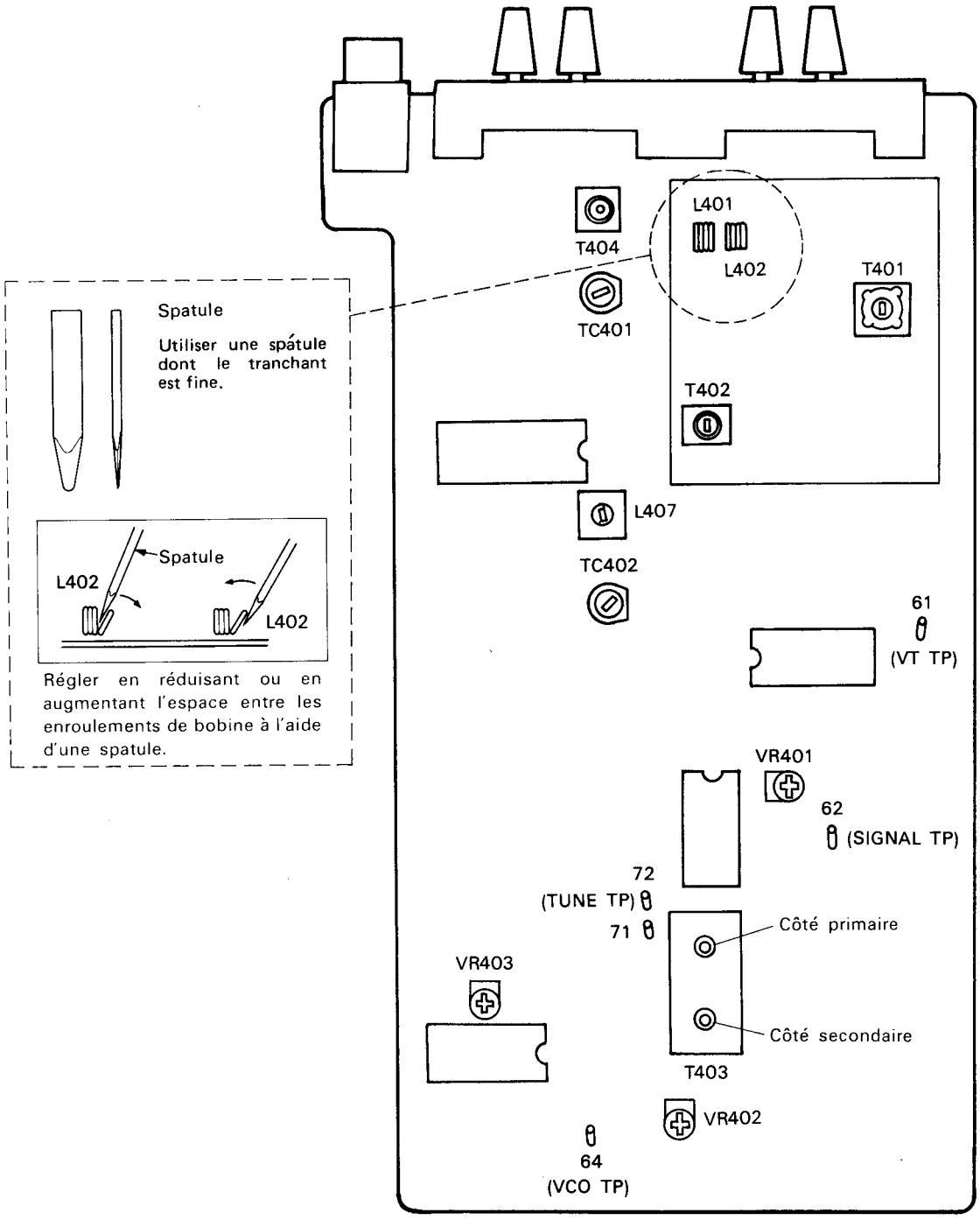
SYNTONISATEUR MA/OM

- Conncter l'antenne bouclée au générateur de signal MA (AM SG) et l'ANTENNE BOUCLEE (réglage) à la borne de l' ANTENNE MA.
- Régler le commutateur FUNCTION sur MA/OM.

Etape	AM SG (400 Hz, 30% MOD)		Affichage de fréquence	Point de réglage	Procédé de réglage
	Fréquence	Niveau			
1	Aucun signal		530 kHz	L407	Régler la fiche 61 de l'ens, tuner à 1,2V (±0,05V)
2			1600 kHz	TC402	Régler la fiche 61 de l'ens, tuner à 10,0V (±0,1V)
3	Répéter les étapes 1 à 2 jusqu'à ce que les valeurs obtenues soient conformes aux spécifications				
4	600 kHz	60 dB	600 kHz	T404	Régler is sortie de la fiche 62 de l'ens, tuner au niveau maximal.
5	1400 kHz	50 dB	1400 kHz	TC401	
6	Répéter les étapes 4 et 5 jusqu'à ce que les valeurs obtenues soient conformes aux spécifications.				
7	S'assurer que le TUNING IND est allumé.				

- La distance entre l'antenne-cadre A côté AM SG et l'antenne-cadre B côté récepteur (SX-V400), c'est-à-dire du centre de l'antenne-cadre côté A à celui de l'antenne-cadre côté B devrait être de 60 cm.




Spatule
Utiliser une spatule dont le tranchant est fine.
Spatule
L402
L402
Régler en réduisant ou en augmentant l'espace entre les enroulements de bobine à l'aide d'une spatule.
T404
TC401
L401
L402
T401
T402
L407
TC402
61
(VT TP)
VR401
62
(SIGNAL TP)
72
(TUNE TP)
71
Côté primaire
Côté secondaire
VR403
T403
VR402
64
(VCO TP)

14. AJUSTE

Sécción del sintonizador de FM

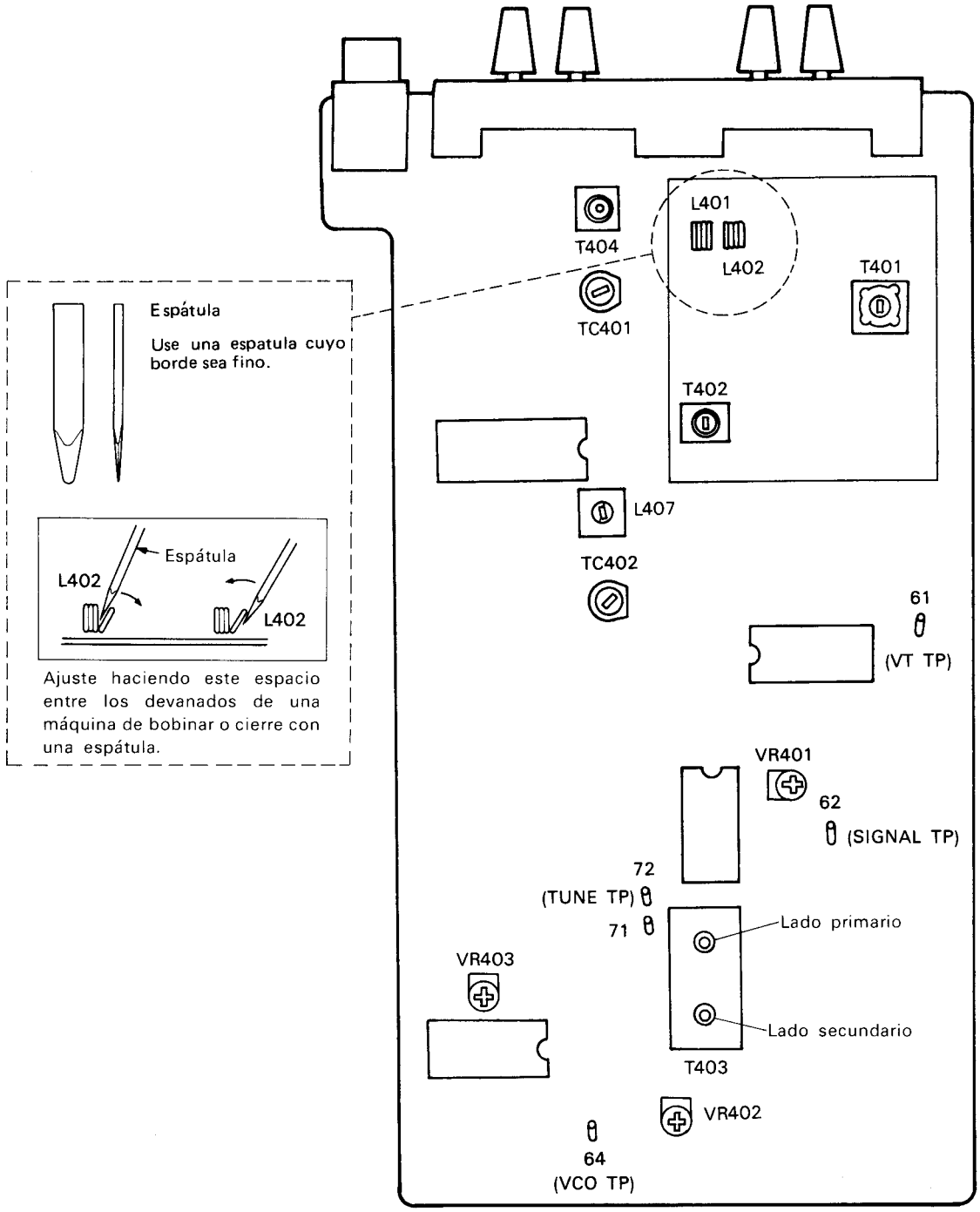
- Conecte el generador de señal de FM (FM SG) a la terminal de la ANTENA de 300 a través de la antena ficticia de 300.
- Fije ef interruptor AUTO/MANUAL a la posición MANUAL y el interruptor de FUNCTION a FM.

Paso	FM SG (1 kHz±75 kHz dev.)		Indicación de frecuencia	Punto de ajuste	Procedimiento de ajuste
	Frecuencia	Nivel			
1	Sin señal		87,5 MHz	—	Patilla de inspección 61 (3,4±1,50) de conjunto del sintonizador
2			108,0 MHz		Patilla de inspección 61 (8,7 $^{+2,5}_{-2,0}$ V) del montaje del sintonizador
3	98 MHz	20~30 dB	98 MHz	T401, L402 T402	Fije la salida de la patilla 62 del montaje del sintonizador a su máximo nivel.
4	98 MHz	60 dB	98 MHz	T403 (Lado primario)	Adjuste el voltaje a través de la patilla 71 y 72 del montaje del sintonizador al centro del medidor T.
5	98 MHz	60 dB	98 MHz	T403 (Lado secundario)	Distorsión minimizada.
6	Repita los pasos 4 y 5 hasta que sean satisfechos ambos valores nominales de las especificaciones.				
7	98 MHz Sin modulación	60 dB	98 MHz	VR402	Adjsute la frecuencia en la patilla 64 del montaje del sintonizador a 76,0 kHz (±100 Hz)
8	98 MHz Modulación estereo*	60 dB	98 MHz	VR402	Minimize la distorción en la salida del canal derecho y la del izquierdo (ajuste T402 dentro de ±90°)
9	98 MHz Modulación estereo*	60 dB	98 MHz	VR403	Separación maximizada.
10	98 MHz	24 dB	98 MHz	VR401	Primero girelo completamente en el sentido de las manecillas del reloj, luego girelo gradualmente en contra del sentido de las manecillas del reloj, y detengalo en el punto donde se encienda STEREO IND.
* Modulación estereo: Principal 1 kHz D+I±68,25 kHz Piloto desv. 19 kHz±6,75 kHz desv.					

Sécción del sintonizador de AM/MW

- Conecte la antena de cuadro al generador de señal de AM (AM SG), y conecte la ANTENA de cuadro (del aparato) a la terminal de la ANTENA de AM.
- Fije el interruptor de FUNCTION a la posición de AM (MW).

Paso	AM SG (400 Hz, 30% MOD)		Indicación de frecuencia	Punto de ajuste	Procedimiento de ajuste
	Frecuencia	Nivel			
1	Sin señal		530 kHz	L407	Fije la patilla 61 del montaje del sintonizador a 1,2V (±0,05V)
2			1600 kHz	TC402	Fije la patilla 61 del montaje del sintonizador a 10,0V (±0,1V)
3	Repita los pasos 1 y 2 hasta las dos clasificaciones especificadas sean satisfechas.				
4	600 kHz	60 dB	600 kHz	T404	Fije la salida de la patilla 62 del montaje del sintonizador al máximo nivel.
5	1400 kHz	50 dB	1400 kHz	TC401	
6	Fepita los pasos 4 y 5 hasta que las dos clasificaciones especificada sean satisfechas.				
7	Cerciórese de confirmar que el IND TUNING este encendido.				



- La distancia entre la antena de cuadro A del lado AM SG y la antena de cuadro B del lado del receptor (SX-V400), es decir, desde el centro de la antena de cuadro A al centro de la B, debe ser de 60 cm.